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RATIONAL THERAPY OF ALCOHOLISM: A CLINICAL STUDY.

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ALCOHOLISM is a collective term embracing primarily various toxic phenomena called forth by the excessive, irregular, and long-continued use of alcohols, resulting either acutely in death or, at a later period, in grave secondary changes, seriously compromising the functions of the most vital organs of the body and doing irreparable damage to its tissues.

Taken with due consideration, at the proper time, in proper strength, and in fairly moderate quantity, alcohol in the form of light, dry wine acts not merely as a gentle stimulant to cerebration and digestion, but also—and this is of the highest importance in the treatment of exhausting fevers—as a food, offering through its own oxidation a valuable substitute, which, being destroyed in the body, generates during this combustion an estimable amount of force, reducing thereby in an appreciable manner the consumption of organized tissues held in reserve, to be immediately turned into energy when called for, retarding in this way retrograde metamorphosis, and restraining to some extent the otherwise too rapid evolution of nitrogen. Being only too acceptable to the palate, it is readily assimilated, and soon manifests itself in the production of the peculiar fascinating effect on the cerebral faculties, by dispelling gloomy thoughts and weakness, rousing in the excited brain latent and amorous feelings, and imparting to the individual new mental and physical strength, painting at the same time the future in its gayest colors. Under such conditions alcohol proves of benefit to the entire system by promoting nutrition and checking waste; but entirely the opposite obtains when imbibed indiscriminately—a primary evanescent stimulation rapidly superseded by a secondary but lasting depression, ending in a state of more or less complete narcosis. Considered in such a light, alcohol is absolutely harmful and detrimental to the normal state of health, and its use constitutes a pernicious and obnoxious habit.

For the sake of convenience and clearness in discussion, the subject of alcoholism may be divided into various stages: acute, subacute, chronic, and periodic. The first three are linked together; the fourth is entirely separate, and should be regarded as a form of insanity—a monomania. The discussion of the habit itself is excluded from consideration in this paper, being a subject thoroughly exhausted. I shall, however, attempt to emphasize a few details based on careful observation of the abundant material at my disposal while in charge of the alcoholic pavilion of Bellevue Hospital.

Acute alcoholism must be regarded as a form of acute toxic poisoning demanding, as such, immediate attention to promote rapid elimination or annihilation of the substance inducing this toxemia, for death is by no means so rare a termination as is generally supposed. Statistics on this subject are totally inconsistent and of but little practical value, for in the majority of instances the family physician yields to the entreaties of the friends, and substitutes *the results* without specifying the cause, hiding the latter under the cover of myocarditis and chronic nephritis, thus sparing the feelings of distressed relatives.

We have to deal with two classes of cases, one showing the ordinary type of profound intoxication, resulting from a gradual imbibition of more or less diluted liquors, the other representing strikingly the phenomena of sudden cardiac collapse due to the swallowing of an enormous quantity of raw spirits in a very brief space of time. This type is most dangerous and tends in the majority of cases toward a fatal issue. The patient usually falls to the ground, gasping for breath, is blue in the face, losing consciousness almost immediately; the pulse is rapid, irregular, and rather high in tension. Death may occur from inhibition of the heart's action before assistance is possible; usually, however, it is delayed for several hours. The countenance becomes pale, the eyes lose their expression, the pupils are widely dilated and but slowly respond to light, the respirations are shallow and rapid; the pulse now loses in volume and becomes rapid, feeble, and irregular, clammy perspiration starts on the forehead, the skin is cool, and if medical aid is not at hand the patient dies. In such a case immediate stimulation is imperative; before resorting to the stomach-tube one should administer a hypodermic injection of

Nitroglycerin	gr. $\frac{1}{50}$
Atropin	gr. $\frac{1}{100}$
Tincture of digitalis	♏ x.

Or,

Aromatic spirit of ammonia . .	ʒss.

The exhibition of ether or alcohol is, if possible, to be avoided; then, while an assistant loosens the clothing around the neck, the stomach-tube is inserted into the mouth, held open by a gag, cork, or bandage. Unfortunately the teeth may be tightly pressed together, defying any attempts at separation. No time is to be wasted, and the tube should be passed through one of the nostrils and carefully manipulated by a rotary movement backward into the esophagus and stomach. The ordinary gastric siphon of red rubber and a funnel are preferable to the pump, and the tube enters the nose, if well oiled or dipped in glycerol, without much trouble. Light pressure over the epigastrium suffices usually to start the flow of fluid, which should be exhausted as much as possible before water is introduced. This may become necessary when the fluid ceases to come, as a result either of obstruction of the tube by particles of food or of occlusion of the holes by a sucking inward of the gastric mucous membrane. When the stomach is thought to be empty it is washed out with several pints of lukewarm water, to remove any traces of alcohol. Then four ounces of warm milk, mixed with an equal quantity of sweet-oil and half a dram of sodium chlorid, are injected into the stomach, acting as a mild laxative and protecting at the same time the mucous membrane, and discouraging further absorption of any toxic products in the lower bowels. An enema of glycerol, ℥ij, ox-gall, ℥j, will be found useful. We avoid unnecessary exposure and excitement, for here we are confronted by a depression both of the nervous and vascular systems—in other words, a condition of shock. We maintain and equalize temperature by applying a hot pack, which may be removed in from thirty to forty minutes. An hour after the first hypodermic injection another of glonoin, gr. $\frac{1}{60}$, strychnin sulphate, gr. $\frac{1}{30}$, is to be given, and repeated, if necessary, three hours later. In the interval between the two, aromatic spirit of ammonia, ♏ xx–xxx, administered subcutaneously, successfully sustains the cardiac energy till the strychnin has been absorbed in sufficient quantity to restore permanently to the exhausted heart its natural muscular tone. In the course of two or three hours a change for the better or worse may be expected; if a fatal termination threatens, phenomena are very self-evident, death occurring either from gradual cerebral exhaustion or slow failure of heart-power, accompanied by pulmonary edema. A hopeful issue may with some certainty be predicted when the pulse becomes more regular, less rapid, and increases in force with a proportional diminution in the frequency of the respirations and an augmentation in the depth of the individual acts. The countenance, too, deadly pale at first, assumes a more natural hue, the corneal reflex returns, and the pupils, widely dilated primarily, soon regain their natural size. However promising the case, it is wise to be guarded as to the possible outcome, for not infrequently are patients, already considered convalescent, carried off by a suddenly developing pneumonia or acute bronchitis. When the dangers of circulatory failure have been successfully combated and the heart is under control, deep sleep will ensue, from which the patient should not be roused, but allowed to pass on to an uneventful recovery. The after-treatment will be taken up in the consideration of the subacute variety.

The congestive type differs widely from the anemic variety, being far slower in onset, and the impression produced on the nerve-centers is, consequently, much less pronounced. When the narcotic stage is reached subsequent to a comparatively short period of boisterous delirium, the countenance will be found deeply flushed, cyanotic; the veins prominently exposed and turgid; the pupils widely dilated; respiration laden with the fumes of alcohol, quite deep, at times stertorous; the pulse at first rapid, full, and bounding, then slow and intermitting, finally rapid, feeble, and irregular, betokening impending heart-failure. The temperature, as in the anemic type, is apt to be subnormal, especially if the individual is not accustomed to the use of alcohol or has been exposed to cold; in the latter instance sometimes falling below 96°. In one case the thermometer registered 92.8° F. on admission. Little or no deviation from the normal is found in the alcoholic toxemia of the habitual drunkard. Narcosis, as a general rule, is rarely so profound that active irritation is not followed by response; particularly a sharp rap on the soles of the feet evokes almost immediately a groan; this is a procedure much in vogue amongst the police force, though not entirely devoid of danger.

Immediate lavage with lukewarm water should be attempted, and afterward there should be introduced by a tube a pint of water containing an ounce of Rochelle or Epsom salt; catharsis may be hastened by an enema. A cool plunge-bath, or, better, a warm sponge-bath with an icecap to the head, followed by thorough massage and a hot pack, re-establishes the cutaneous circulation and induces free diaphoresis. Catheterization is rarely called for; generally we meet with relaxation of both rectal and vesical sphincters. Should the patient not be able to swallow, and constipation prove an obstinate feature, recourse may be had to the subcutaneous administration of magnesium sulphate in the form of a concentrated aqueous solution, gr. x–xx as a dose. Out of ninety-five cases subjected to this treatment 14 per cent. promptly and satisfactorily responded by profuse evacuations; with the rest there was little or no effect. Hydragogues or drastic cathartics, such as elaterium and croton-oil, should be avoided on account of the intense depression following; they are absolutely harmful in the anemic type. Free emesis

should be encouraged if the gastric siphon is not applicable, either by tickling the fauces or by warm salt-water or mustard-water, or the careful exhibition of apomorphin, the most reliable emetic at our command; it must be employed with circumspection and in moderate doses. In four cases alarming signs of prostration were witnessed after subcutaneous injection of $\frac{1}{16}$ of a grain; this may be obviated by combination with the tincture of digitalis.

Convulsions are not uncommon in this type, and may lead to a fatal termination. They are, in the majority of instances, induced by a passive hyperemia of the cortex, resulting from cerebral edema, with a concomitant increase of the ventricular fluid, frequently associated with minute petechial hemorrhages on the pia and localized thickening of the membrane; in other cases lesions assume a more definite character and present themselves in the shape of isolated patches of the new-formed connective tissue, highly vascular, often the seat of minor hemorrhages, recognized pathologically as chronic internal hemorrhagic pachymeningitis, a condition almost pathognomonic of chronic alcoholism, and giving rise to repeated attacks of irregular palsies and monoplegias of variable duration. As convulsion signifies an over-excitation of the central nervous system, a sedative would seem to be specially indicated. One may then administer at once, subcutaneously, morphin, gr. $\frac{1}{4}$–$\frac{1}{8}$, omitting the atropin, and gr. xx of chloral, and gr. xxx of potassium bromid dissolved in ʒij of warm water, by the rectum. Croton-oil, gtt. ij–iij, or elaterin, gr. $\frac{1}{8}$, may be given by the mouth, to produce free watery stools, extracting fluid constituents from the blood and lessening cerebral congestion.

Should syncope threaten at any time stimulants must be exhibited. Holding a piece of cotton saturated with aqua ammoniæ, or a few drops of amyl nitrite, under the nose often aids in rousing the patient at this stage. In this type both the cerebral and circulatory systems are well balanced; hence, sudden depression is not to be feared. Treatment, therefore, may be more rigorous than stimulating. The personal appearance of the individual may also aid us, for, generally speaking, the extremes of age, the weak and debilitated, particularly tuberculous patients whose bodies have been drained of their vital elements, and those unfortunates who, addicted to one habit, resort to this to drown their sorrow, are by far more liable to go into collapse—*i. e.*, assume the anemic type, than the rough and strong, whose nervous system is less sensitively organized, and, consequently, not so easily depressed. After the acute symptoms have subsided the management becomes practically the same as that of the next type under consideration, namely, the subacute variety.

Here we have to deal unquestionably with a well-established habit; the individual has experienced the craving for liquor, and long since become addicted to its use; it has ceased to be a luxury; it is to him one of the necessities of life, and rather would he forego his food than be without the stimulant; he must have it, and nothing but alcohol will gratify his desire. Satisfied with the ordinary amount at first, the time soon arrives when the patient is compelled to increase the moderate allowance, in order to secure the same effects as formerly. On retiring at night the overtaxed brain finds no rest, the man is strangely excited and restless; a hot toddy does away with this torture, and a deep sleep falls over the weary eyes; in the morning he awakens with a dull, boring headache, feels very much out of sorts and sick at his stomach, and, naturally, the bottle is called upon, its contents affording considerable relief; exhaustion makes way for a buoyancy of spirits entirely new to him. He is able to consume a good breakfast with a very fair appetite. This state of affairs may continue for an indefinite period; but generally, little by little, the daily ration has to be increased and multiplied, till finally enormous quantities barely suffice to gratify the wants of a confirmed alcoholic. Should the individual at this stage be taken ill with acute disease of any form utter prostration would carry him off immediately, unless alcohol be supplied in sufficient quantity to meet the demand made on the tissues, so long accustomed to the drug that, were this discontinued, serious embarrassment of innervation would inevitably result, intensified as it is by the presence of an acute disease and partial disorganization of the nerve-centers and threatening delirium tremens.

Complete abstention is still advocated by some theorists, even under these conditions; but they are greatly outdistanced by an overwhelming majority, who, by a careful exhibition of the proper amount of stimulants, achieve most brilliant success, particularly in acute lobar pneumonia befalling a chronic alcoholic, with threatening explosions of nervous phenomena; here alcohol effectually controls cerebral hyperesthesia, supports the heart, maintains nutrition, and reduces temperature.

The prime factor in the treatment of this stage resolves itself into immediate restriction of the injurious liquid, prohibiting the use of raw spirits, and substituting, if necessary, those of a milder kind. We should absolutely condemn the pernicious practice of drinking before meals to stimulate an appetite, since at that period the stomach is empty, and the alcohol certain to be absorbed exerting a most deleterious influence on the exposed gastric and hepatic tissues. We are not to be too hasty in reducing the amount of stimulants, as a sudden withdrawal not infrequently precipitates an attack of delirium tremens. The time when alcohol is most craved is early in the morning before break-

fast, when the stomach, irritated by an accumulation of thick, ropy mucus, rebels and tries to rid itself of its nasty contents. Almost invariably we find a catarrhal pharyngitis, the viscid mucus closely adherent to the vault of the pharynx, causing an intolerable tickling in the throat and inducing violent fits of coughing, which, by reflex action, produce sharp spasms of the diaphragm, ending in distressing spells of vomiting, by means of which the mucus is finally expelled. This morning-sickness, perfect torture to the patient, occurs promptly every day, usually on getting up from bed, and indicates a catarrhal condition of the gastro-intestinal tract. There is no agent in the whole pharmacopeia capable of displacing or superseding the ordinary gastric siphon. The relief afforded by that simple contrivance is sometimes marvellous. Lavage in such cases is daily rising in favor, and deservedly so; it thoroughly cleans the stomach, restores tone to the flaccid walls, checks the production of unhealthy mucus, and stimulates the glands to an increased secretion. The patient easily acquires the technique when shown several times, and can pass the tube himself without much inconvenience. In order to be successful, lavage should be performed at first daily for a week one hour before the midday meal, which by preference ought to be the heaviest, followed by a light supper at night. Warm water containing sodium bicarbonate in the proportion of ʒij to the pint will be most serviceable. Should there be an appreciable deficiency in free hydrochloric acid in the gastric juice, ʒj of the diluted acid is to be added to the pint of water, and is followed at times by the happiest results. Let the irrigation be continued till the water returns clear and fairly free from mucus. If the patient is naturally costive, ℥ss of Rochelle or Epsom salt dissolved in half-a-pint of lukewarm water may be left behind, insuring free catharsis, of undoubted benefit after a debauch, lessening through its revulsive effect the throbbing headache resulting from passive congestion of the brain. Calomel in the form of tablet-triturates, gr. $\frac{1}{10}$ every ten minutes till gr. iij are taken, is an excellent means of clearing the enteric tract. It should be followed by a saline the next morning, which greatly adds to its effects, lessens griping, and expels any traces left behind.

An hour or two after lavage an intestinal antiseptic should be administered, such as gr. v of salol, naphthalin, salophen, or ♏x of oil of wintergreen or peppermint. Most efficient is the following:

Sodiumsalicylate	gr. xv.
Sodium bicarbonate	gr. x.
Tincture of capsicum . . .	♏x.
Peppermint-water . . q. s. ad	f℥ss.—M.

One dose. Repeat once in four hours.

This is very successful when taken in anticipation, preventing fermentation and intolerable sick headache. We should encourage the liberal use of mineral and other waters, and tone up digestion with

Tincture of capsicum . . .	♏xx.
Compound tincture of cinchona .	ʒss.
Tincture of nux vomica . .	♏vj.
Peppermint-water . . q. s. ad	fʒij.—M.

One dose, to be taken in water every four hours, ten minutes before meals.

The diet should be regulated, and for three days following the debauch should consist of milk, milk-toast, beef-tea, chicken-soup, then of eggs, oysters, fish, etc., gradually approaching a general diet rich in vegetables and fruits, especially apples, lemons, and oranges. Frequently patients complain of acid regurgitation of fluids shortly after meals. This is easily remedied by gr. xx of sodium bicarbonate before eating; at times, however, the acid itself is deficient in quantity, and it should then be reinforced, best by the administration of nitrohydrochloric acid, given with meals—from ♏x to xv of the diluted acid in a wineglassful of water. This not alone supplies an acid, but also aids digestion by exerting a stimulating influence on the liver. Later on, with the stomach in fair condition, sodium bicarbonate gr. v, before meals, sometimes is sufficient to stimulate an increased flow of acid. If on examination the patient proves to be of a bilious temperament, subject to attacks of dyspepsia, the careful use of calomel in small doses in triturate-form is often very beneficial, gr. $\frac{1}{4}$ three times daily for four days, but not longer, otherwise unpleasant salivation will occur, a large dose being less dangerous in that respect than a small one often repeated; but it is also less efficient. Unless there is an idiosyncrasy toward the drug the result will be most gratifying to the patient; it produces mild catharsis, an increased flow of bile, and unloads the pelvic viscera, usually in a state of chronic passive congestion. On the morning of the fourth day a full dose of salts before breakfast adds to its effects. The bowels must be kept open, and the process should be free and easy—one movement, at least, a day. A teaspoonful every three or four hours of the ordinary rhubarb and sodium bicarbonate mixture usually accomplishes this purpose. After the acute phenomena have been ameliorated tonic treatment must be continued, improving the general condition by free outdoor exercise and nutritious food. Strict regulation of hours and habits is imperative.

Any tendency toward insomnia must be corrected by a timely and cautious use of hypnotics, as, *e. g.*, gr. xx of sulphonal or trional. Sulphonal is not reliable, as it not infrequently produces its characteristic effects the night following. Trional has a better reputation, and, to my knowledge, is devoid of danger. Like sulphonal, it soon loses in power, and the dose has to be increased; it is specially applicable to uncomplicated cases without marked nervous

manifestations. Sometimes the newer antipyretics may be employed with some benefit: doses of gr. x of lactophenin, phenacetin, antifebrin, or antipyrin. Like sulphonal and trional, they are not suitable for continual use, but good results can be obtained by judicious variation. These drugs are best administered from one-half to one hour before bedtime, placed dry on the tongue, taking a glass of hot water to which a little capsicum has been added after it; this in itself in some cases was followed by sleep. The most satisfactory agents are chloral, with its derivatives, and the bromids. Chloral has a great reputation, and deserves it, only it must be exhibited with care. It is contraindicated in old alcoholics with fatty heart and in cases with great mental excitement. Here the bromid effectually takes its place. Chloral, from its pungent taste, is not a favorite, though given dissolved in ice-water to which some essence of wintergreen has been added, it is quite acceptable; the dose has to be increased to tolerance for continuous effect. Butyl or croton chloral hydrate gr. x, and chloralamid from gr. xv to xx, are very serviceable at times. The bromids, however, are of the highest importance, and rank first in those cases of alcoholism in which the nervous element predominates. The potassium salts are considered most efficient, and yield excellent results in combination with sodium and strontium bromids; they are easily taken in effervescent mineral water or in peppermint-water. A useful mixture is the following:

℞.—Potassium bromid } . . āā gr. xx.
Sodium bromid }
Chloral . . . . . gr. x.
Ext. erythroxyl. (coca) sufficient to make fʒj.
Sig.—To be taken at night in peppermint-water.

Or for general sedative influence:

℞.—Potassium bromid . . . . ℥ss.
Chloral . . . . . ʒij.
Tincture of digitalis . . . fʒj.
Peppermint-water . . q. s. ad fʒiv.
Sig.—ʒj thrice daily after meals.

Paraldehyd, from fʒss to fʒss, is an excellent hypnotic, but is crowded out of the ordinary formulary owing to its exceedingly nasty taste and repulsive odor. Hyoscyamus in the form of the tincture, fʒss to fʒij at a dose, is very satisfactory in combination with other drugs; its alkaloid, hyoscyamin, possessing undoubted advantages, is widely used in doses varying from gr. $\frac{1}{100}$ to $\frac{1}{20}$ combined with from gr. $\frac{1}{12}$ to $\frac{1}{8}$ of morphin. Hyoscin, owing to its uncertainty in action and depressing influence, is rarely used, the dose being from $\frac{1}{100}$ to $\frac{1}{50}$ of a grain. In opium we have an agent absolutely certain in its effects, but highly dangerous when used indiscriminately Five cases of chronic opium-habit have come under my observation, brought about by careless treatment with opium during the course of a supposed cure for alcoholism. It is not wise to employ opium in any form for the ordinary insomnia, from the ease with which the habit is incurred. In the wakefulness accompanying alcoholism bordering on delirium tremens, when sleep is our only hope, a full dose of opium is often invaluable; at times I have seen excellent results follow the administration of gr. $\frac{1}{10}$ of opium every ten minutes for two hours, producing refreshing sleep lasting from six to nine hours. A rapidly working combination is morphin from gr. $\frac{1}{8}$ to $\frac{1}{4}$, atropin gr. $\frac{1}{120}$, or, instead of the latter, hyoscyamin gr. $\frac{1}{60}$ given by subcutaneous injection.

Morning nausea is likely to be a prominent feature and quite persistent. In such cases the patient should be instructed to partake of some hot water, coffee, or tea early in the morning before assuming the upright posture; a glass of iced Vichy, seltzer, or other mineral water, or a Seidlitz powder, often gives relief to an irritable stomach; an active cathartic at night-time or a saline laxative half-an-hour before breakfast may be tried, frequently with success. An ice-bag to the epigastrium, or a hot cloth sprinkled with ʒj of oil of turpentine applied to the abdomen is sometimes efficient. Medicinal treatment is of more avail; gr. x of a bromid immediately before retiring or early in the morning, with some effervescent drink, every other day for a week, may effect a permanent cure. Cocain in doses of from gr. $\frac{1}{8}$ to gr. $\frac{1}{2}$ is generally very prompt, but in itself at times causes vomiting, owing to the disagreeable sensation resulting from anesthesia of the soft palate. There is, however, one great objection to its repeated employment, namely, the acquisition of the habit. The same holds good of morphin and its salts, which are undoubtedly very valuable. Usually, however, one or the other of the following agents accomplishes the object:

Tincture of nux vomica . . . ♏v.
Fowler's or Donovan's solution of arsenic . . . . . ♏ss–j.
Dilute hydrocyanic acid . . . ♏iij–viij.
Hoffmann's anodyne . . . ♏xx.
Spirit of chloroform . . . ♏v.
Creosote . . . . . ♏j.
Eucalyptol . . . . . ♏ij.
Lime-water . . . . . fʒss–fʒj.
Aconitin . . . . . gr. $\frac{1}{300}$.

Or,

Tincture of aconite . . . . ♏j.
Tincture of cimicifuga . . . ♏v.
Cerium oxalate, bismuth subnitrate, quinin dihydrochlorate, pepsin, charcoal, in doses varying from gr. v–x.
Powdered ipecac . . . . . gr. $\frac{1}{8}$.

Or,

Wine of ipecac . . . . . ♏j–iij.
Tincture of capsicum, ginger, or cardamom . . . . . ♏ij–v.

They all deserve a fair trial, either singly or in combination.

To reduce the morbid craving for alcohol nothing to my knowledge can supersede subcutaneous administration of large doses of strychnin nitrate. In order to fulfil this purpose it must be given as stated; otherwise the results will be very disappointing. When taken internally it merely exerts its tonic influence upon digestion and nutrition, and only hypodermically does it manifest in the highest degree its peculiar power over innervation. The following method I have found very serviceable after the more acute catarrhal phenomena have subsided. Here as anywhere else idiosyncrasy is liable to play us a trick, and it is therefore advisable to give to the patient a test-dose of gr. $\frac{1}{20}$ of strychnin nitrate; if well borne, the treatment may be commenced. The principal object is to make a profound impression on the nerve-centers within a short time, employing the maximum dose consistent with the safety of the patient. Alimentary support and good hygienic surroundings are necessary requirements. On the first day an injection is made into the right arm over the region of the deltoid of gr. $\frac{1}{8}$ at 9 A.M., and another at 5 P.M. into the left arm; on the second day, strychnin nitrate gr. $\frac{1}{10}$, hyoscyamin gr. $\frac{1}{120}$, at 9 A.M.; again at 5 P.M., omitting the latter; on the third day: strychnin nitrate gr. $\frac{1}{15}$ at 9 A.M, 1 and 5 P.M., with hyoscyamin gr. $\frac{1}{120}$ at 1 P.M.; on the fourth day: strychnin nitrate gr. $\frac{1}{20}$ at 9 A.M., 1 and 5 P.M.; on the fifth day: strychnin nitrate gr. $\frac{1}{25}$ at 9 A M, 1 and 5 P.M.; on the sixth day: strychnin nitrate gr. $\frac{1}{30}$ at 9 A.M., 12 M., 3 and 6 P.M.; on the seventh day: strychnin nitrate gr. $\frac{1}{30}$ at 9 A.M., 1 and 5 P.M. We now discontinue all medication for one week, during which time the compound tincture of cinchona, or of gentian, from ʒss to ʒj, tincture of cimicifuga, ♏xx t. i. d. before meals, iron and arsenic will also be found very useful. We then resume the treatment, starting with strychnin nitrate gr. $\frac{1}{30}$ t. i. d., increasing to gr. $\frac{1}{20}$ t. i. d., and continue for one week; at this time there will be a noticeable change in the patient's condition, with marked improvement mentally and physically. It is well to watch the patient closely during the first week, so as not to overstep tolerance; the judicious combination of hyoscyamin, from gr. $\frac{1}{120}$ to $\frac{1}{100}$, will allay too strong nervous irritability. An occasional dose of potassium bromid at night will be of benefit.

Chronic alcoholic poisoning constitutes a disease, and the manifestations are but too self-evident. Treatment is of no avail so far as the disease itself is concerned, because we are dealing with a general connective-tissue sclerosis associated with serious vascular changes and fatty degeneration of the essential viscera. The iodids are said to have an affinity for sclerosed tissues, and should be tried, but with judgment, otherwise they may cause more damage than they do good by still more disarranging the already very irritable stomach. Combined with an alkali and administered in small doses in milk after meals, they are generally well borne. Mineral tonics with bitters are highly recommended for the cachexia. In all doses of aconite, ♏j every two hours, successfully relieve the throbbing headache resulting from a left ventricular hypertrophy induced by general endarteritis and cirrhotic kidneys. The same rules regarding regulation of habit and diet are applicable here; other treatment should be symptomatic. Strychnin may be useful, especially when there is an incipient neurosis caused by alcoholism. Insomnia is to be treated as before, avoiding the exhibition of chloral to an old alcoholic with a fatty heart. Amylene hydrate, from ♏xxx to lxx, and urethan, from ʒss to ʒij, are highly praised as not affecting either circulation or respiration.

Periodic alcoholism, dipsomania, more properly termed oinomania, is not to be confounded with habitual alcoholism, being not a habit but a monomania dependent on some pathologic lesion or defect in the brain. The clinical history of the individual cases strongly points toward the fact that it possibly has a close relation to epilepsy.

The condition is characterized by a rapid onset, the prodromal period lasting from one to three days, and a more or less protracted and intense paroxysm of maniacal excitement, associated with a mad desire for alcoholic stimulants taken in enormous quantities, terminating invariably in stuporous melancholia and profound depression, with suicidal intents and utter prostration, from which the patient gradually rallies. Heredity seems to play an important part, as is well demonstrated by three cases coming under my notice:

One was the son of an epileptic himself subject to that disease, with a beginning secondary dementia. The paroxysms, occurring about every three or four weeks, were ushered in by a convulsion lasting but a few minutes, followed by from two to four hours of profound sleep. According to the friends' statements, on awakening the patient would beg for whisky and consume considerable quantities without showing any signs of intoxication. He would act very queerly at times, usually displaying considerable intellect, contrasting strongly with the stupidity in the intervals between these seizures. On the evening of the third day he became very noisy and excitable, talking and mumbling incoherently, and finally fell into profound sleep, from which he awoke dull, stupid, and somewhat exhausted, evincing no desire for whisky.

The second case, not so well marked, gave an indefinite history on the mother's side, but stated that the father died from alcoholism.

The third case was that of a well-to-do planter, from the Bermudas, highly educated and of good social standing. His mother died in a private asy-

lum for the insane; the father is also dead from a cause unknown, but he was a very moderate drinker. The patient himself was an abstainer, married, with two children, apparently free from defects, and attended to his business satisfactorily. About every three or four months he packed his travelling-bag, informing his family that business of a personal nature called him to New York; when he arrived he drank excessively for four or five days; during this time he was able to go about in a dazed manner, becoming violently excited when an attempt was made to cut off the alcoholic stimulants. On the fifth or sixth day he got drowsy and fell into a stupor, remaining thus for from sixteen to eighteen hours. On admission to the hospital he was comatose, presenting a yet recent wound from ear to ear crossing the larynx, proving that an unsuccessful attempt at suicide had been made, to which the patient confessed later on. During his first night in the hospital he tried to hang himself by means of a handkerchief tied to the bedpost; when told of this later on he indignantly denied it. Prostration was marked, and memory was much enfeebled. He began to recover rapidly under subcutaneous administration of strychnin, and was discharged two weeks later in fairly good physical and mental condition.

Nothing can be accomplished with this class of cases so far as home-treatment is concerned; they are proper subjects for a suitable hospital, where the patient rests entirely in the hands of a physician. Alcohol should be strictly withheld and powerful sedatives exhibited near the time of the expected attack. The strychnin-treatment should be carefully tried, perhaps in combination with morphin. Perfect cures are probably exceedingly rare, but considerable may be done in attending to a reasonable extent to the patient's wants, and above all to his bodily condition.

NORMAL AND SURGICAL ANATOMY OF THE VERMIFORM APPENDIX.[1]

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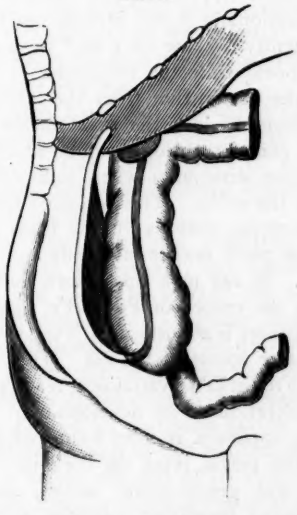
THE results chronicled in this paper were drawn almost entirely from various post-mortem examinations and from practical work in the dissecting-room. The specimens are the more varied and peculiar of those prepared. Each consists of the cecum, a portion of the ileum and colon, the attached peritoneum, and the appendix. Measurements and other observations were first taken *in situ*. After removal a fresh specimen was soaked in warm water for a few hours, then in a one per cent. solution of mercuric chlorid for a day, and afterward immersed in glycerol. In this manner the bowel retains an elastic and natural state of preservation.

During development of the alimentary canal a diverticulum is noticed separating the small and large bowel in the region later occupied by the ileo-cecal valves. The lower part of this loop remains comparatively small; the proximal portion enlarges to form the dilated cecum, probably about the sixth week of fetal life. All this takes place on the left of the median line of the abdomen, but in the process of development gradually crosses over toward the liver. At the sixth month the cecum is found in its most frequent location in the right iliac fossa. This peculiar translation will account for the varied positions of the appendix in the abdominal cavity, because it may be arrested in the median line near the liver, or even extend into the pelvic cavity. Indeed, it is frequently found in close relation to the rectum, uterus, or bladder, without showing any signs of having been changed to an abnormal position by cicatricial tissue. Although six months is the average time for its descent, I once found the cecum high up behind the right hepatic lobe in an eight-months' fetus, although this is often more apparent than real on account of the enormous size of the liver.

FIG. 1.



In a case that developed pus, reported by Dr. H. A. McCallum, of London (THE MEDICAL NEWS, December 17, 1892), the appendix was situated on and adherent to the upper surface of the liver. An eminent authority, Mr. Treves, of London, supposed that this condition has arisen from arrested descent of the large bowel. It may well be questioned how the appendix could possibly lie in such a position except in the foregoing manner, unless drawn upward by cicatricial tissues, or indeed if the liver

[1] Read before the London Medical Society, October, 1894.

were not enlarged or floated downward. This specimen (Fig. 1), however, will easily persuade you that such a condition may and does happen with a normally placed cecum, the appendix being very long and lying on the liver above the gall-bladder.

When the abdomen is incised the parietal layer of the peritoneum will be divided and the peritoneal cavity opened. If the omentum and intestines are pushed aside, the visceral layer can be traced upward from the pelvic organs to the right iliac fossa, approaching quite close to Poupart's ligament and covering the psoas and iliac muscles. On reaching the highest limit of the under surface of the cecum it bends forward and downward to cover its pouch-like blind extremity, and, meeting with the appendix, completely invests it to the tip as well as being reflected over the front of the cecum to cover the ascending colon where it is continuous with the parietal layer from the side of the abdominal wall.

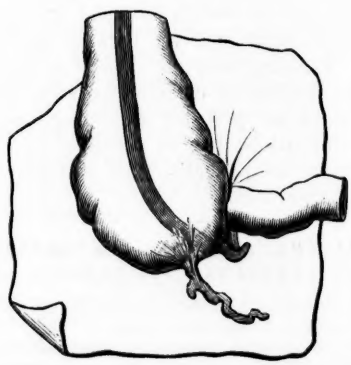
The cecum, then, is in nearly every case totally invested by peritoneum, lies quite loosely in its position, and is freely movable. The appendix now floats in the general peritoneal cavity with a mesentery that not only binds it to the caput coli, but also to the mesentery of the small intestine as it passes behind the distal end of the ileum. The appendix is, therefore, in nearly all cases, intra-peritoneal, is occasionally in the peritoneum *in toto*, but more frequently its base for a half or one inch is extra-peritoneal while the remainder is intra-peritoneal. The peritoneum from the cecum arches over the ileum to join the great mesentery, often forming a complete bridge, under which the ileo-cecal junction disappears when sufficient air is injected into the colon. This so-called normal position of the cecum, then, is on the front and outer edge of the psoas muscle internally and the iliacus externally. It lies in a line drawn vertically upward from the center of Poupart's ligament, and its lowest border is almost on a level with the anterior superior spines of the ilia. This is subject, however, to remarkable variations, readily explained by a consideration of its development. Indeed, a rather long appendix is often found dipping down into the true pelvis, lying on the iliac vessels, the obturator and genito-crural nerves, and in the female bearing important relations to the broad ligament and the right ovary. It may also point in various directions even when the position of the caput coli itself is normal. Sixty-four per cent. of my cases showed it to lie in the recognized position, either being curled on itself or pointing toward the sacro-vertebral angle. More than half the remainder lay on the psoas and hung into the pelvic cavity. The rest projected at various angles, either toward the pubes, the internal abdominal ring, the anterior superior spine of the ilium, or upward and outward parallel with the ascending colon. In one instance, an old case of hernia, it lay in the scrotum, with the cecum and five feet or more of the ileum, and was adherent (a very rare condition), with the rest of the bowel, to the sac.

Analysis of my specimens gave an average measurement of three-and-a-half inches in the female and three in the male. The shortest was only three-quarters of an inch. One was bifid, being represented by two little buds jutting out from the bowel. The longest was seven inches, possessed no mesentery, and was attached to the cecum and colon to within half-an-inch of the tip. One specimen was no larger than a knitting-needle, but was four-and-a-half inches in length.

The lumen is generally small, with its sides in apposition. In one case the interior was as large as the index-finger, and was completely filled, for quite an inch, with hard fecal matter, but no symptoms had been complained of during life from this condition.

A mesentery is generally present, and often gives the appendix remarkable latitude. Sometimes a large deposit of fat lies on the appendicular mesentery, and an elongated layer will simulate the appendix (Fig. 2). From the base of the appendix

FIG. 2.



to the angle formed by the bend of the peritoneum, which is reflected over the end of the cecum from the iliac fossa, the average measurement was one-and-a-half inches.

The structure, therefore, lies in a pouch much like a small pocket, bounded above and in front by the cecum, behind by the angle of peritoneum, and internally by the last inch of the ileum and the raised border of the psoas muscle. The opening into the cecum is quite readily seen, and is situated by average measurement rather more than one inch from the ileo-cecal mouth, and is guarded generally by an incomplete valve of mucous membrane, the good service of which is very doubtful. This seems not to be a regularly constituted valve, but a mere

puckering of the mucous membrane. It is formed probably much in the same way as a hemorrhoid is enlarged by pressure. It is, at any rate, incapable of preventing air or feces from entering the lumen of the appendix.

In all cases the anterior band of fibers, which is characteristic of the large bowel, runs over the cecum and on to the vermiform process. It spreads out, as in the rectum, to form part of its structure, so that when from some cause the appendix cannot be found this longitudinal muscular band should be traced to its termination. It is quite half-an-inch in width and easily recognized.

The pocket of peritoneum in which the appendix lies is usually very thin, more markedly so than in any other region. In all the prepared specimens the serous membrane was very elastic, and when stretched to a considerable distance easily returned to its normal condition. Too much extension, however, destroyed this elasticity.

These experiments will serve to explain the enormous pouches found in some herniæ.

FIG. 3.

My dissections of the fetus at various stages of development offer marked contrasts to those of the adult. About the sixteenth week the liver fills almost the whole abdominal cavity, and when the parietes are removed only a few small intestines are seen peeping out from beneath its lower border. When this organ is turned up (Fig. 3) there seems to be no difference between the ascending colon and transverse colon, for the large bowel lies in an almost horizontal direction. The kidney is very large, and is easily seen through the thin transparent peritoneum. The appendix, instead of being attached like a small bud shooting out from a large trunk, as in the adult, in reality tapers off like a veritable continuation. No appreciable constriction is present as a line of demarcation, its base being of the same size as the cecum. Most of these processes were remarkably long in comparison with the rest of the intestinal tract.

As the organ is of the same size as the cecum at the fourth month and earlier, this fact tends to support the view that it is but a retrograde metamorphosis of that portion of the bowel. The duodenum is now the largest portion of the alimentary canal, the jejunum next, while the ileum, though much smaller than the former, is still larger than the colon. The testicle is found lying in the iliac fossa near the internal ring, through which it soon passes on its way to the scrotum.

The arterial supply to the appendix is derived generally from the ileocolic artery, occasionally a special branch of the superior mesenteric itself. The little vessel runs on to the appendicular mesentery at its free border and spreads over its surface much in the same manner as in the ileum and colon. This is beautifully demonstrated in the thin transparent peritoneum of the fetus. In one well-marked case smaller vessels were traced upward in the serous membrane from the iliac fossa, derived probably from the external iliac or deep external iliac arteries. Its nervous mechanism is doubtless derived from the same source as the adjacent portions of the intestine, viz.: the intrinsic ganglia connected first with the sympathetic on the superior mesenteric artery, thence to the solar plexus and the splanchnics, the great and lesser.

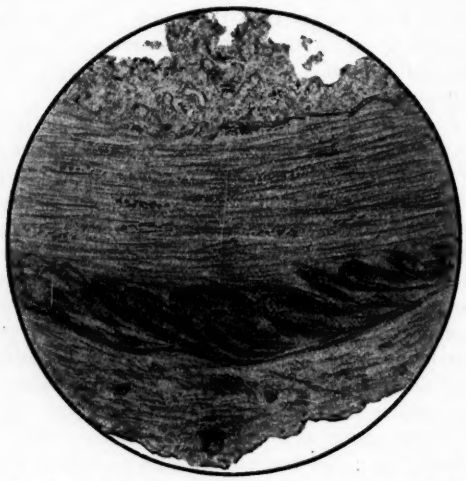
It is evident, then, that vasomotor disturbances would equally affect the appendix with the general supply, except that its tendency to a retrograde metamorphosis has already altered the normal condition of its nerves.

Whatever may be the real condition setting up inflammation in this region, the appendix is in the majority of cases the seat of the trouble. It would seem reasonable to suppose that the cases that develop inflammation and get well in a few days should be due to the cecum, and the more serious cases leading to suppuration to the appendix. The bowel has a powerful peristaltic action to bear on the fecal material, and so aids evacuation; but the appendix is rarely relieved of its contents in this manner. The circular muscular coat is comparatively meager in the appendix, but by no means totally absent, as some have asserted; in fact, it was in one case of appendicitis much thickened, as well as the mucosa. Doubtless the appendix endeavors to rid itself of foreign material by contractions analogous to the vermicular action of the rest of the alimentary tract, and colic results.

The objection that has been raised to the occurrence of appendicular colic is that the circular coat is too meager to cause spasm. But it seems that it may hypertrophy under irritation, as it appears to

have done in one particular case, that of Miss R., a patient of Dr. H. A. McCallum, who kindly gave me a portion of the appendix, which we both prepared microscopically, finding the circular muscular coat greatly thickened, and representing quite a third of the whole (Fig. 4) appendicular wall. This patient presented a history of six attacks of apparent appendicitis (appendicular colic) during two years.

FIG. 4.



Showing exudation of leukocytes between the muscle-fibers, as well as in the lymphoid tissue.

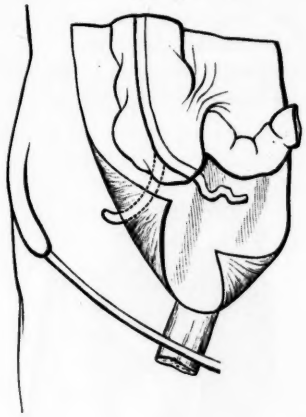
It would, therefore, seem right to praise any medical means directed to the prevention of a loaded cecum. By this the incipient foreign irritant of whatever nature would have less opportunity of insinuating itself too far into the opening of the appendix, as sometimes happens. Impaction of feces may not necessarily lead to any disturbance whatever, as in a few of my cases the lumen was completely filled with hardened contents of the intestines, yet without previous complaint of symptoms.

Appendicitis may well be mistaken for perinephric abscess, because there is in many cases but little distance between the appendix and the lowest portion of the right kidney. A localized pain in the right iliac fossa, however, arises from many other causes, the appendix being no more to blame than a molar in facial neuralgia. This suspicion is heightened when we notice that in most of the specimens examined, death resulting from other causes, no adhesions or other signs were present. It seems that most of the bad cases are due to the vermiform process, because material once firmly impacted has but little chance of removal. This nidus would offer a suitable colony for germs. Foreign bodies are found sometimes, and perhaps lead to suppuration more frequently than is supposed. During the evacuation of pus may they not be sometimes entirely overlooked and the trouble referred to some other cause?

If the appendix be really but a remnant, like many organs undergoing a retrograde evolution, it is liable to be inflamed. This may be due to a natural tendency, as the tail of a tadpole is removed for the purpose of inaugurating a new and more perfect era in the future life of the animal.

The question is often asked where the abscess forms in suppurative appendicitis. By this is meant after perforation has taken place. This will depend, of course, upon the position of the appendix and its relation to the peritoneum. If it be situated entirely behind, the angle of the serous membrane will be in front and the abscess will be retroperitoneal (Fig. 5). The cases in which the

FIG. 5.



appendix is uncovered are the rarest. The first half-inch of its base is often behind the peritoneum, and perforation here would lead to a collection of pus behind. If it be invested entirely with serous membrane, as is the usual condition, it will be within the general cavity, and ulceration in any part of its course will lead to an intraperitoneal tumor. There are two or three reasons why this latter condition is not always present:

1. It is seen that the first half-inch is often uncovered, and perforation in that part would lead to a collection in the connective tissue behind the cecum.

2. The mesentery is often short and sometimes absent, the appendix being closely adherent to the bowel. Perforation may lead to a discharge by the rectum, as frequently occurs.

3. Even when five inches or more in length, situated entirely within the cavity and having an elongated mesentery, a retroperitoneal abscess often occurs. Although the appendix would seem to have a perfectly wide range of liberty, yet in the natural condition no space whatever is allowable. All parts

of the viscera, intestines, omentum, and parietes are closely pressed together in the same manner as the urethra is when at rest. The appendix will then, of course, lie in perfect apposition with the posterior layer of peritoneum and in front to the small intestine. Ulceration taking place in the posterior wall, leads to a matting of the appendix and the peritoneum, both layers are involved, and the abscess becomes retroperitoneal. This, in its turn, may again burst back and become intraperitoneal, or work its way in various directions. It would seem reasonable to suppose at first sight that when an intraperitoneal abscess is formed death would rapidly ensue. On account of close apposition of the structures the lymph thrown out during the inflammatory process forms a barrier or capsule that prevents general infection. If perforation took place suddenly, with overflow of pus, collapse would probably immediately occur. In one case only this wall or capsule was thick and as hard as cartilage.

A swelling in the right iliac fossa, then, may be due to many different causes, and any one of them, as far as the anatomy of the parts is concerned, may set up very similar symptoms. As the usual position of the cecum is on the front and outer edge of the psoas muscle, and also on the iliacus, and almost immediately above the center of Poupart's ligament, it will bear important relations to the following structures:

I. The ilioinguinal and iliohypogastric nerves, irritation of which would cause altered sensation in the lower parts of the abdominal wall, the iliac crest, and the inner side of the thigh. There may also be rigidity of the muscles in this region.

II. The external cutaneous and anterior crural, affecting sensation on the outer part and front of the thigh and the inner side of the leg below the knee. Pain in the knee-joint or spasm of the prefemoral muscles may follow, and there may be retraction of the testicle from involvement of the genito-crural; or, also, affections of the adductors of the femur, with possible hip-trouble through the obturator nerves. In a young man of twenty-two years hyperesthesia of the prefemoral region was a prominent symptom.

We may also have urinary symptoms from proximity of the kidney and ureter, flexion of the thigh by irritation of the psoas, altered circulation in the iliac and spermatic vessels, and perhaps obstruction of the inferior vena cava.

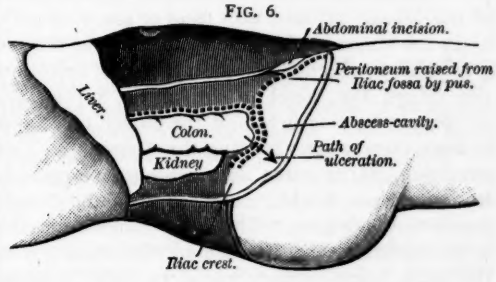
If, then, the cecum is so loosely connected in the peritoneal cavity as to be found in almost any position, pus will also be found in regions far removed from those where the appendix is expected to lie. Adhesions to an ovarian cyst have greatly complicated an ovariotomy. In an operation for hematosalpinx, with removal of the right tube and ovary, the appendix was found to be inflamed, and was removed. There was a distinct connection in this case between the two by a structure analogous to the so-called appendiculo-ovarian ligament.

This specimen (see Fig. 1), 6½ inches in length, lay external and parallel to the ascending colon, with its apex resting on the anterior surface of the liver, above the gall-bladder. Abscess might have occurred in front or behind the hepatic lobe, involving the pleura or lung, without the real cause of the trouble being suspected.

As pus may be found in almost any position, the incision is to be made directly over the most prominent part and the pus evacuated. The most important anatomic structure to locate is the deep epigastric artery, which ascends upward and inward to the outer edge of the rectus abdominis muscle. If the knife be kept external to a line from the center of Poupart's ligament to the umbilicus, no danger will be likely to occur from this vessel. If it should be cut, the incision should immediately be enlarged and both ends tied. This is necessary on account of the free inosculation it has with the superior epigastric branch of the internal mammary.

As exhaustion is a frequent cause of death, may not an early operation better be performed immediately when pus has been found pre ent? Delay is certainly dangerous when an abscess is burrowing in close proximity to such a highly inflammable and important structure as the peritoneum.

FIG. 6.



As the cecum rests below the crest of the ilium, if excision be decided upon, operation from behind would fail to reach the appendix in a satisfactory manner. In case of abscess, though the pus burrows backward as well as downward in the recumbent position, drainage from behind would be facilitated by a posterior incision (Fig. 6) in the lumbar region. The bottom of the abscess-cavity is by actual measurement 2½ inches, or even more, below the incision in front and above Poupart's ligament. In a boy of eight years of age, a patient of Dr. Balfour, drainage was effected behind and close to the iliac crest, with rapid recovery, the little fellow leaving the hospital within a month.

This lumbar opening, though, carries a risk. Postmortem appearances show that operation for suppurative appendicitis should be conducted by the

surgeon with the greatest care. Manipulation by insertion of the finger to hunt for some satisfactory solution of the condition might easily break down an extremely thin partition. Indeed, rather than use such force, would it not be better simply to incise the bulging part as one does an ordinary abscess in other regions? This may be done without washing out with syringe or other instrument, followed by a dressing with antiseptic absorbent material. Nature will undoubtedly endeavor to provide resolution in the same manner as when a boil is lanced, if good drainage is used. In other words, in too much manipulation lies the danger of breaking down the natural wall and setting up general peritoneal infection. This appeals to us more forcibly when we remember that the pouch-like cavity of peritoneum in which lies the appendix is the thinnest portion of serous membrane in the vicinity. The lymph-wall is occasionally so thin that the gentlest touch with the handle of the scalpel is sufficient to tear the tissue and allow pus to enter the general cavity. How important it is, then, to be extremely cautious!

The colon has a mesentery, a mesocolon, and this was present in 30 per cent. of my cases. When very long it may implicate matters somewhat in drainage from behind. In my experiments (post mortem) injection of the colon *in situ* with water or air invariably rotated the cecum outward, where it lay quite close to the anterior superior spine and crest of the ilium. If filled with feces or gas, it is very likely the tumor would be felt much nearer this region than in affections of the appendix; injection also caused the bowel to overlap the appendage, completely burying it behind the dilated coils, and in some cases entirely twisting the mesentery. This condition, taking place during life from large collections of gas, would possibly shut off the blood-supply to the process. The artery comes from the large mesentery, and lies behind the distal end of the ileum, where pressure would be liable to cause obstruction. The injected air not only enters the cecum, but the appendix as well, completely filling its lumen to the tip, offering further means for twists and pressure. In only a few cases did this experiment fail.

Whether air or gas ever enter the appendix during life is a question, but this may be tried with some profit on the ape or wombat, animals that are scarce in this vicinity. This may have some small place in setting up trouble by volvulus and pressure. Hence an altered blood-supply in an organ that is ever ready, as is said, on account of its retrograde tendency to spontaneous combustion, would be the result.

If this evolutionary theory be a correct one, the arteries and nerves have, perhaps, a tendency to degeneration, and the resisting powers of the appendix are lessened; hence, all such causes as twists and pressure predispose to trouble. When it is remembered that the appendage lies in a small pocket-like cavity, may not intermittent pressure from the impacted large bowel act in a similar manner? In one operation undertaken for recurrent attacks by Dr. John Wishart at St. Joseph's Hospital nothing whatever was found in the lumen, no glands in the vicinity were enlarged, and yet the distal portion was as large as the thumb, with its mucosa much thickened and inflamed. This lay immediately behind the cecum and wedged down in the bottom and angle of the pouch of peritoneum. Constipation was present.

When it is found necessary to open the abdomen, apart from a bulging abscess, some difficulty may be experienced in locating the exact position of the appendix even in the cadaver. If the incision be made in the median line, this will be increased, because the operator is wide of the mark, and the only structures seen are the omentum and numerous coils of small intestine. The best procedure would be, if possible, to lay open the abdomen in the right linea semilunaris. The ascending colon will be seen lying on the right side, and is recognized by its large size, sacculated appearance, more fixed and constant position, and a prominent band of longitudinal muscular fibers. This is half-an-inch in width and extending the whole length. Still, after this has been located the appendix may not come into view, even after lifting the lower end of the cecum and turning it inward. There may be bands of cicatricial tissue, or the appendix may be in an abnormal position. Sometimes an elongated piece of peritoneum or a diverticulum filled with fat has presented a similar appearance (Fig. 2). This has been so marked as to be entirely mistaken for the appendix in the post-mortem room and by students at the examinations, much to their disgust and my amusement. But one young gentleman was wise enough to incise the cecum and obtain the appendicular outlet. The specimen presented is a good representation of how this difficulty may arise, as the appendix is no larger than an ordinary knitting-needle. The specimen would be markedly similar when viewed through a deep incision, as it lies in the bottom of a deep, dark cavity, buried among numerous coils of intestine. But there is always one unfailing method, and that is, to follow down the anterior band of longitudinal muscle-fibers of the colon, which shows distinctly through the serous covering. In every dissection this was traced to the base and wall of the appendix, which it formed. When the appendix lies externally and ascends toward the liver the relative position of its internal opening to that of the ileum is still unaffected. The cecum is twisted a little outward at the base, and this band, instead of turning inward, follows its

unfailing pathway to wherever the worm-like process lies.

CONCLUSIONS.

1. The development of the alimentary canal readily explains abnormal positions.

2. At the twelfth and sixteenth weeks there seems to be no difference in size between the base of the appendix and the cecum.

3. Prior to the sixth and seventh months the cecum and appendix lie well up in the abdomen, behind the liver or median line.

4. The appendix is nearly always found covered by peritoneum, and in most cases possessed of a mesentery.

5. There is generally a well-marked muscular circular coat.

6. The relative measurements between the exit of the appendix and the ileum are pretty constant.

7. The appendicular artery lies behind the distal portion of the ileum, and is accessible to pressure.

8. The wall of the appendix is always formed by the anterior band of muscular fibers from the cecum.

9. The appendix is readily filled with air from the cecum. In only a few cases did this fail.

10. From its position in a pocket-like cavity it is accessible to pressure from an impacted large bowel.

11. Feces collected in the lumen of the appendix do not necessarily set up any pathologic disturbance.

12. Air or fluid injected into the large bowel invariably rotates the cecum outward, in close relation to the anterior superior spine and crest of the ilium.

13. In this experiment the appendix is often dragged into abnormal positions and twisted on itself.

14. When ulceration takes place, with extraperitoneal formation of pus, two layers of serous membrane are involved if the appendix be intraperitoneal. Anatomically, it is possible for pus to separate the layers of the appendicular mesentery.

15. The lowest part of the abscess-cavity in the recumbent position is two or three inches on a lower level than the incision in front and above Poupart's ligament.

16. An intimate relation sometimes exists between the tubes and ovaries with the appendix. In such a case suppurative appendicitis and hematosalpinx were both present, though no distinct suppurating tract could be traced between them.

17. A swelling in the right iliac fossa will give rise to similar symptoms from like anatomic relations to important viscera, vessels, and nerves.

18. When a large collection of pus has formed in the iliac fossa a tender spot may generally be felt in the lumbar region on the crest of the ilium, close to the sacro-iliac articulation. A downward incision at this point will be sufficient to evacuate the abscess.

CLINICAL MEMORANDA.

INTESTINAL HEMORRHAGE IN UREMIA.

BY JOHN ALDEN LICHTY, M.PH., M.D.,
OF CLIFTON SPRINGS, N. Y.

ALTHOUGH all standard authorities upon clinical medicine give quite a list of symptoms of uremia, we rarely find hemorrhage from the bowel mentioned, and still more rarely do we find cases of it reported. Under the general causes of such hemorrhage Whittaker[1] mentions the forms of nephritis marked by uremia, and Musser[2] says that it may occur in connection with hemorrhage from the mucous surfaces. Bartels[3] twice refers to it as a symptom of renal disorders, and gives a full report of one case of genuine contracting kidney in which there was "considerable loss of blood per anum" for consecutive days; and yet "the autopsy furnished no information upon the exact etiology of the hemorrhages." Davidson[4] reports a case of uremia with hemorrhage in which the autopsy revealed an ulcer in the duodenum, with obliteration of the cystic duct, and various writers speak of ulcerative and even diphtheric processes occurring in the ileum and large intestine of patients dying from uremic poisoning. Owing to the limited number of cases that I have been able to find, I report four cases which occurred in the Philadelphia Hospital while I was resident physician under Dr. W. E. Hughes and Dr. S. S. Cohen as visiting chiefs. All four occurred within three months.

CASE I.—Mr. H. H., fifty-nine years of age, a German, had upon admission dyspnea and swollen feet; the urine contained casts and albumin in abundance, and the bowels were constipated. Four days before death his bowels became loose, and much blood was passed with the stools, some dark and some bright red, He died in uremic coma. The autopsy showed both kidneys very much contracted, and dotted profusely with large and small cysts. The stomach and duodenum seemed normal; the mucous membrane of the small intestine, and especially of the colon, was deeply injected with blood, but no distinct points could be found as the seat of the hemorrhage.

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surgeon with the greatest care. Manipulation by insertion of the finger to hunt for some satisfactory solution of the condition might easily break down an extremely thin partition. Indeed, rather than use such force, would it not be better simply to incise the bulging part as one does an ordinary abscess in other regions? This may be done without washing out with syringe or other instrument, followed by a dressing with antiseptic absorbent material. Nature will undoubtedly endeavor to provide resolution in the same manner as when a boil is lanced, if good drainage is used. In other words, in too much manipulation lies the danger of breaking down the natural wall and setting up general peritoneal infection. This appeals to us more forcibly when we remember that the pouch-like cavity of peritoneum in which lies the appendix is the thinnest portion of serous membrane in the vicinity. The lymph-wall is occasionally so thin that the gentlest touch with the handle of the scalpel is sufficient to tear the tissue and allow pus to enter the general cavity. How important it is, then, to be extremely cautious!

The colon has a mesentery, a mesocolon, and this was present in 30 per cent. of my cases. When very long it may implicate matters somewhat in drainage from behind. In my experiments (post mortem) injection of the colon *in situ* with water or air invariably rotated the cecum outward, where it lay quite close to the anterior superior spine and crest of the ilium. If filled with feces or gas, it is very likely the tumor would be felt much nearer this region than in affections of the appendix; injection also caused the bowel to overlap the appendage, completely burying it behind the dilated coils, and in some cases entirely twisting the mesentery. This condition, taking place during life from large collections of gas, would possibly shut off the blood-supply to the process. The artery comes from the large mesentery, and lies behind the distal end of the ileum, where pressure would be liable to cause obstruction. The injected air not only enters the cecum, but the appendix as well, completely filling its lumen to the tip, offering further means for twists and pressure. In only a few cases did this experiment fail.

Whether air or gas ever enter the appendix during life is a question, but this may be tried with some profit on the ape or wombat, animals that are scarce in this vicinity. This may have some small place in setting up trouble by volvulus and pressure. Hence an altered blood-supply in an organ that is ever ready, as is said, on account of its retrograde tendency to spontaneous combustion, would be the result.

If this evolutionary theory be a correct one, the arteries and nerves have, perhaps, a tendency to degeneration, and the resisting powers of the appendix are lessened; hence, all such causes as twists and pressure predispose to trouble. When it is remembered that the appendage lies in a small pocket-like cavity, may not intermittent pressure from the impacted large bowel act in a similar manner? In one operation undertaken for recurrent attacks by Dr. John Wishart at St. Joseph's Hospital nothing whatever was found in the lumen, no glands in the vicinity were enlarged, and yet the distal portion was as large as the thumb, with its mucosa much thickened and inflamed. This lay immediately behind the cecum and wedged down in the bottom and angle of the pouch of peritoneum. Constipation was present.

When it is found necessary to open the abdomen, apart from a bulging abscess, some difficulty may be experienced in locating the exact position of the appendix even in the cadaver. If the incision be made in the median line, this will be increased, because the operator is wide of the mark, and the only structures seen are the omentum and numerous coils of small intestine. The best procedure would be, if possible, to lay open the abdomen in the right linea semilunaris. The ascending colon will be seen lying on the right side, and is recognized by its large size, sacculated appearance, more fixed and constant position, and a prominent band of longitudinal muscular fibers. This is half-an-inch in width and extending the whole length. Still, after this has been located the appendix may not come into view, even after lifting the lower end of the cecum and turning it inward. There may be bands of cicatricial tissue, or the appendix may be in an abnormal position. Sometimes an elongated piece of peritoneum or a diverticulum filled with fat has presented a similar appearance (Fig. 2). This has been so marked as to be entirely mistaken for the appendix in the post-mortem room and by students at the examinations, much to their disgust and my amusement. But one young gentleman was wise enough to incise the cecum and obtain the appendicular outlet. The specimen presented is a good representation of how this difficulty may arise, as the appendix is no larger than an ordinary knitting-needle. The specimen would be markedly similar when viewed through a deep incision, as it lies in the bottom of a deep, dark cavity, buried among numerous coils of intestine. But there is always one unfailing method, and that is, to follow down the anterior band of longitudinal muscle-fibers of the colon, which shows distinctly through the serous covering. In every dissection this was traced to the base and wall of the appendix, which it formed. When the appendix lies externally and ascends toward the liver the relative position of its internal opening to that of the ileum is still unaffected. The cecum is twisted a little outward at the base, and this band, instead of turning inward, follows its

unfailing pathway to wherever the worm-like process lies.

CONCLUSIONS.

1. The development of the alimentary canal readily explains abnormal positions.

2. At the twelfth and sixteenth weeks there seems to be no difference in size between the base of the appendix and the cecum.

3. Prior to the sixth and seventh months the cecum and appendix lie well up in the abdomen, behind the liver or median line.

4. The appendix is nearly always found covered by peritoneum, and in most cases possessed of a mesentery.

5. There is generally a well-marked muscular circular coat.

6. The relative measurements between the exit of the appendix and the ileum are pretty constant.

7. The appendicular artery lies behind the distal portion of the ileum, and is accessible to pressure.

8. The wall of the appendix is always formed by the anterior band of muscular fibers from the cecum.

9. The appendix is readily filled with air from the cecum. In only a few cases did this fail.

10. From its position in a pocket-like cavity it is accessible to pressure from an impacted large bowel.

11. Feces collected in the lumen of the appendix do not necessarily set up any pathologic disturbance.

12. Air or fluid injected into the large bowel invariably rotates the cecum outward, in close relation to the anterior superior spine and crest of the ilium.

13. In this experiment the appendix is often dragged into abnormal positions and twisted on itself.

14. When ulceration takes place, with extraperitoneal formation of pus, two layers of serous membrane are involved if the appendix be intraperitoneal. Anatomically, it is possible for pus to separate the layers of the appendicular mesentery.

15. The lowest part of the abscess-cavity in the recumbent position is two or three inches on a lower level than the incision in front and above Poupart's ligament.

16. An intimate relation sometimes exists between the tubes and ovaries with the appendix. In such a case suppurative appendicitis and hematosalpinx were both present, though no distinct suppurating tract could be traced between them.

17. A swelling in the right iliac fossa will give rise to similar symptoms from like anatomic relations to important viscera, vessels, and nerves.

18. When a large collection of pus has formed in the iliac fossa a tender spot may generally be felt in the lumbar region on the crest of the ilium, close to the sacro-iliac articulation. A downward incision at this point will be sufficient to evacuate the abscess.

CLINICAL MEMORANDA.

INTESTINAL HEMORRHAGE IN UREMIA.

BY JOHN ALDEN LICHTY, M.PH., M.D.,
OF CLIFTON SPRINGS, N. Y.

ALTHOUGH all standard authorities upon clinical medicine give quite a list of symptoms of uremia, we rarely find hemorrhage from the bowel mentioned, and still more rarely do we find cases of it reported. Under the general causes of such hemorrhage Whittaker[1] mentions the forms of nephritis marked by uremia, and Musser[2] says that it may occur in connection with hemorrhage from the mucous surfaces. Bartels[3] twice refers to it as a symptom of renal disorders, and gives a full report of one case of genuine contracting kidney in which there was "considerable loss of blood per anum" for consecutive days; and yet "the autopsy furnished no information upon the exact etiology of the hemorrhages." Davidson[4] reports a case of uremia with hemorrhage in which the autopsy revealed an ulcer in the duodenum, with obliteration of the cystic duct, and various writers speak of ulcerative and even diphtheric processes occurring in the ileum and large intestine of patients dying from uremic poisoning. Owing to the limited number of cases that I have been able to find, I report four cases which occurred in the Philadelphia Hospital while I was resident physician under Dr. W. E. Hughes and Dr. S. S. Cohen as visiting chiefs. All four occurred within three months.

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at once, and became conscious and rational. The respirations rose to 20. In several hours she again became comatose, and died twelve hours later.

At the autopsy both kidneys were found to be small and scarred, and showed an advanced stage of chronic interstitial nephritis. Purpuric spots appeared in the skin and mucous membranes. In the intestines there were numerous large areas of submucous hemorrhagic extravasations, but no distinct points of external hemorrhage.

CASE III.—Mr. C. A., seventy-six years old, was a German by birth. The man had been in the hospital for nearly a year, and at various times he had had swelling of the lower extremities. The urine contained albumin and casts. Four days before death he began to have involuntary evacuations of the bowels, attended with free hemorrhage, which finally became so profuse that it really seemed to be the immediate cause of death, though the patient had been in uremic coma for twenty-four hours. Unfortunately no autopsy could be obtained.

CASE IV.—Miss A. O., aged thirty-five years, was a deaf-mute. She had general anasarca, and the urine contained casts and albumin. The bowels were usually constipated, but at various times she had diarrhea. Frequently the diarrheal stools contained blood, sometimes dark and at other times bright red. At this writing the patient is still living.

It will be noticed that in neither autopsy was there any lesion found other than a submucous extravasation of blood. Such being the case, it seems highly probable that the hemorrhage from the bowels was due to a general oozing of blood from the capillaries and arterioles which lay within the mucous and submucous coats of the intestines; and this tendency to oozing may be due to the extensive sclerosis which was so well marked in the cases just reported.

A CASE OF INCARCERATED HERNIA AND ITS REDUCTION BY MEANS OF RECTAL TAXIS.

BY GEORGE S. BROWN, M.D.,
OF BIRMINGHAM, ALA.

ON February 21st I was called to see a white child, C. M., two months old, who, while crying and straining at stool, suffered a right inguinal rupture. I saw him thirty minutes after the accident occurred and discovered a cylindrical-shaped tumor, three inches long and of a nearly uniform diameter of about one inch, distending the right scrotum and extending up to the internal ring. The end of the tumor occupying the bottom of the scrotum was easily made out to be a portion of bowel distended with gas. This composed about one-third of the total length of the tumor. The remaining two-thirds, or two inches, was a solid non-compressible mass. It was traced to and found to be firmly wedged in the inguinal ring. Under profound anesthesia from chloroform and with the child held vertically by the feet to secure the additional aid of gravity I began an attempt to reduce it by taxis. It was a surprise to me to find how very tightly this solid portion of the hernia was wedged into the inguinal opening. It conveyed a sensation to the hand similiar to that of a corn-cob stopper in a jug (to use a readily understood simile), one that had been forced into the jug with an effort and time allowed for the inner end to absorb fluid and swell to the size of the large end outside. Upon introducing my finger into the rectum, after half-an-hour of futile effort at taxis in the ordinary way, I was even more forcibly struck with the exactness of the foregoing comparison. The tumor could be moved about between my finger in the rectum and my external hand in any direction except vertically through the ring. Just here it seemed to me that I had discovered something valuable, as I found I had absolute knowledge and control of the entire hernial mass. By making steady pressure on the mass from without, while with the finger in the bowel I pushed from side to side in every direction the portion of the mass presenting through the abdominal opening of the inguinal canal, I was finally rewarded by feeling the mass move back through the opening slowly and tightly all the way, and at last drop back into the abdomen. This portion, clearly omentum, had followed the loop of bowel through the ring and caused immediate and complete strangulation. The loop of bowel, now that the wedging epiplocele was put out of the way, retreated rapidly under gentle taxis and disappeared with the characteristic flop. The process of reduction is exactly illustrated by inverting a bottle of champagne which is a little stale. The force of the contained carbonic acid will represent the steady pressure maintained by my outside hand, while the to-and-fro motion of the thumb on the cork, to aid its expulsion, will represent the action of my finger in the rectum on the interior portion of the tumor. This finger in the rectum gave exact knowledge of when and how much, first, the epiplocele and, then, the bowel moved, and just when they successively passed back through the internal ring. The tip of the finger could then be introduced into the internal opening. Another useful aid it gave was that on lessening the pressure from without I could push it up alongside the tumor and dilate the internal ring.

On a somewhat superficial search I can find no mention of this method of rectal taxis in the reduction of hernia. If it has before been employed, I would be grateful for information on the subject. At any rate, I wish to emphasize my conviction as to the value of it. Taxis in this case in the ordinary way, with the child inverted and profoundly anesthetized, had completely failed. The finger in the rectum, introduced for examining purposes, rendered the reduction possible and saved a cutting-operation, which was then being prepared for.

I would suggest finally that a recently incarcerated inguinal hernia in an adult might be reduced in a similar manner. A surgeon with a small hand might introduce it entire into the rectum and give material aid to the efforts at taxis without, by traction with finger and thumb on that part of the tumor just within the internal ring. I say this might be possible, and when such a case presents itself I shall certainly try it.

I would add that the child had no further symptom of any injury, being apparently as well as ever the next morning.

Reports of the Meeting of the American Medical Association and of the principal sections for the first days will, by special arrangements, be published in next week's issue of THE MEDICAL NEWS. The remainder of the reports will be in succeeding numbers.

RETRACTION OF THE EYES IN A CASE OF ABOLISHED ADDUCTION AND ABDUCTION.

BY VITO LUIGI RAIA, M.D.,
OF PROVIDENCE, R. I.

H. F., a girl, twenty years of age, came to the Rhode Island Hospital, June 9, 1894, to have her eyes tested for glasses, and showed the following peculiarity: The vision of the right eye was normal; of the left, slightly subnormal. Under homatropin the right accepted

$$+ \text{Sph. } 2 \text{ D}, \subset + \text{cyl. } 0.25 \text{ D, axis } 90°;$$

the left,

$$+ \text{Sph. } 2 \text{ D}, \subset + \text{cyl. } 0.50 \text{ D, axis } 90°.$$

In both eyes the vertical movements were normal; abduction and adduction were completely abolished in the right, and were very limited in the left. If an object was brought near the patient while she made efforts of convergence, the eyeballs were seen to move alternately backward for about two or three millimeters, until one eye alone remained in a stable position, and the lids at the same time manifested movements of oscillation. When invited to read, the patient brought the book to the right or to the left side, and turned her head toward the median plane of the body in order to direct properly one of the visual lines. She thus evidently used only one eye at a time, but sometimes it was the right and sometimes the left for near; for distance, binocular vision was possible only when an object was directly in front. In the oblique position one visual axis could be fixed upon the object aided by a certain inclination of the head.

This case is interesting, first, because of the symmetric disturbance of the muscles in both eyes; second, because of the congenital origin of the trouble; third, because of the backward movements of the eyeballs when efforts at convergence were made; and fourth, because of a certain clonic contraction of the lids that accompanied the efforts of convergence.

In regard to the etiology, the abolition of adduction and abduction in both eyes may depend either upon a congenital nuclear paralysis, or upon an abnormal attachment of the external and internal recti muscles on the posterior part of the globe. In the last hypothesis the internal recti would have no power in rotating the eyes on the vertical axis, but would simply pull them backward, and the peculiar movements of retraction during the efforts of convergence would thus be easily explained.

The oscillation of the lids, due to clonic contraction of the orbicularis, has nothing to do with the movements of retraction, because the repeated separation of both lids from the globes with a retractor has no effect in diminishing it.

Dr. Cheney, of Boston, has reported another case in the *Medical Record* of November 7, 1891, but not having had the opportunity to read the original article, I do not know in what respect it differs from the case I have reported.

Dr. Isaac Wayne Hughes died at Gulf Mills, Montgomery County, on April 26th, at the age of sixty-three years. He was graduated from the Medical Department of the University of Pennsylvania in 1852.

BACTERIOLOGIC NOTE.

SOME IMPROVEMENTS IN THE TECHNIQUE OF THE DIPHTHERIA CULTURE-TEST.

BY A. P. OHLMACHER, M.D.,
OF CLEVELAND, OHIO.

THE modifications in the prosecution of the diphtheria culture-test herein described will be presented under three heads, as follows:

I. A method of making the bacteriologic diagnosis of diphtheria in four hours with the aid of the incubator.

II. A method of making the culture-test in eighteen hours without the incubator.

III. A suggestion as to the preparation of Loeffler's diphtheria culture-medium.

I. When the diphtheria culture-test was used for sanitary purposes alone the matter of the time consumed in the bacteriologic examination was of no great moment, and a physician was perfectly content to wait eighteen or twenty-four hours for its results. With the advent of the antitoxin-treatment of this disease an entirely new era of usefulness for the culture-test was inaugurated which imposed new obligations on this diagnostic method. The diphtheria culture-test is the natural and legitimate prelude to the clinical use of the new remedy. The diphtheria-antitoxin is successful just as it is used early in the disease, and therefore the culture-test is of value in proportion to the promptness with which its results can be obtained. Under the best of existing methods it is necessary to allow an interval of from twelve to eighteen hours of incubation to elapse before a tube of culture-medium, inoculated with the material from a diphtheric throat, can be examined bacteriologically. This is the rule in all the directions given for this test both in this country and in Europe. Twelve hours is, however, a long time for a clinician to wait, especially if he is withholding the costly diphtheria-antitoxin treatment until a positive diagnosis shall have been reached.

All of the disadvantageous features of the culture-test have occurred to me during a recent extensive series of diphtheria-examinations made in connection with the antitoxin-treatment, and it has been my good fortune to discover a method whereby the time can be lessened, and an accurate bacteriologic diphtheria-diagnosis can be made in four hours from the time a tube of inoculated culture-medium is placed in the incubator.

As is well known to those conversant with the practical details of the diphtheria culture-test, it is customary for bacteriologists to wait until *visible* colonies of the bacteria appear upon the surface of the culture-medium before a microscopic examination is made. In some emergency diphtheria-examinations recently made at the Summit County Children's Home, at Akron, Ohio, it was found necessary to use the heat from a furnace-register to grow the cultures. One of these examinations was made eighteen hours after the culture-medium had been inoculated, and, although no trace of a colony was visible to the eye, I determined to make a microscopic preparation from the apparently smooth surface of the medium in the hope of securing enough bacteria to permit of a diagnosis. The experiment was surprisingly satisfactory, as plenty of characteristic diphtheria-bacilli were found. With this almost accidental experience as a start, a series of experiments have been carried

out, with the result of positively establishing the value of the method in my own mind. In detail, the rapid method of diphtheria-diagnosis may be carried out as follows:

A tube of Loeffler's serum culture-medium, prepared after the modified, or American, method of rapid coagulation, with a smooth, moist, slanting surface, is inoculated with the exudate from the suspicious throat secured with the aid of the Prudden swab. It is of prime importance that the slanting surface of the culture-medium be both perfectly smooth and moist; and care should be taken not to injure the surface of the serum as the cotton swab is rubbed gently but thoroughly over it. A serum with a smooth, exposed surface can be obtained by skilfully preparing the medium; and a moist surface may be secured either by keeping the water of condensation in the tube until just before it is to be used, or by sealing the freshly prepared medium by means of a rubber cap, or with a piece of gutta-percha tissue. As soon as the inoculated tube is received at the laboratory it is placed in the incubator, the temperature of which is 37.5° or 38° C., where it remains undisturbed for four hours. At the end of this time a thoroughly flamed platinum loop is gently rubbed over the smooth surface of the culture-medium, and then the loop is rubbed into a minute drop of distilled water placed in the centre of a clean and sterilized cover-glass. In this way the material obtained on the loop is washed into the drop of water, and while no visible accumulation will have been observed on the platinum loop, an examination of the drop of water with a proper illumination will reveal it to be distinctly cloudy after the washing. The drop of water is now evenly spread, by the use of the loop, over a limited area of the cover-glass. This spreading is also of importance, since an extensive spread would separate the bacteria so widely as to render subsequent examination uncomfortable. If a three-quarter inch square cover-glass has been selected for the work, the first drop of water placed on it should not be more than an eighth of an inch in diameter; and after the mixing and spreading, this drop of water should not cover an area more than one-fourth or three-eighths of an inch in diameter. As soon as the film has dried the cover-glass is passed three times through the flame, and then stained. Personally, I am very partial to methyl-violet[1] as a stain for the diphtheria-bacillus, and it is especially suited for the present method on account of the intensity with which it colors these micro-organisms. After staining, the preparation is washed with water, dried, and mounted temporarily in glycerol or cedar-wood oil, or permanently in Canada balsam.

A specimen prepared in this way will, upon examination with the microscope, reveal the diphtheria-bacilli, providing the case be one of true diphtheria; or it will show the micrococci of false diphtheria.[2] The number of bacteria in one of these early preparations is, as a rule, not great; but no trouble will be experienced in finding plenty of organisms upon which to base a satisfactory diagnosis, providing one is thoroughly familiar with the morphologic characteristics of the various bacteria encountered in the culture-test.

[1] For details in the preparation and use of this stain, see New York Medical Journal, March 2, 1895, p. 269.

[2] This is true whether the culture proves the case to be one of pure diphtheria-bacillus infection, one of mixed diphtheria-infection, one of mixed micrococcus-infection, or one of streptococcus-infection.

It may be interesting to note, in this connection, that in these early cultures the diphtheria-bacilli show very little of that irregularity in morphology that is considered characteristic of them in the later cultures. Pavement epithelial cells from the throat are frequently encountered in these preparations. Very fine preparations, with numerous bacteria, are also often obtained.

In my own work I have had no trouble in easily making a diagnosis in this manner, and the experiment has been repeated time after time with material from a variety of sources, until no doubt remains in my mind as to its practicability. In every case in which an examination by the rapid method was made, the culture-tube was saved and examined at the end of twelve or eighteen hours' incubation as a control-test, with no variation in the results.

II. One great drawback to the more extensive use of the diphtheria culture-test, especially in the hands of the practising physician, lies in the expense and trouble of maintaining an incubator in which to grow the cultures. Several more ingenious than reliable simple incubators have been recommended for use, and now and then some one has suggested that the diphtheria patient's person be utilized as an incubator to hatch the diphtheria-germs. These suggestions have naturally borne little fruit.

Applying the underlying idea of the modified method just outlined, I have found it possible to make a very satisfactory examination of a throat-culture at the end of eighteen hours' exposure at the room temperature. As a rule, no visible colonies will have developed on the surface of the inoculated Loeffler's medium when kept at the room temperature for eighteen hours; but, proceeding in the same way as with the cultures kept four hours in the incubator, it has been found possible to obtain very satisfactory preparations, which were all that could be desired from the diagnostic standpoint.

This method has also been tried a number of times, and controlled by proper experiments, and I now have no hesitancy in recommending it to anyone who is familiar with such work. In this way a physician will be able to make his own diagnosis of diphtheria in eighteen hours, without an incubator. For emergency diphtheria-work in which the bacteriologist finds himself without an incubator, this method will also answer a good purpose.

III. In both of the foregoing methods it is necessary not only to have a smooth and moist Loeffler's culture-medium; but this medium must be so prepared as to offer to the diphtheria-bacilli the best possible conditions for rapid multiplication. Those familiar with the manufacture of Loeffler's blood-serum medium know that one of the very important factors in its preparation lies in the neutralization of the glucose-beef-peptone-bouillon that is added to the serum before its coagulation. The bouillon must have its acid properly neutralized with some alkali, or else the diphtheria-bacilli will be seriously retarded in their growth. Sodium carbonate or sodium hydroxid is ordinarily used to neutralize the bouillon, being added drop by drop until the point of neutralization is reached.

My experience in the preparation and use of this diphtheria culture-medium has convinced me that it is very desirable to carry the addition of the alkali to a point at which a decided alkaline reaction is shown in the bouillon, instead of stopping precisely at the neutral point. A saturated sodium-hydroxid solution is employed for this

purpose, and is added drop by drop until a pronounced blue color is obtained with red litmus-paper.

Loeffler's medium prepared with this bouillon appears to be unusually well suited for the rapid growth of the diphtheria-bacillus, and it has been found especially adapted to the prosecution of the rapid culture-diagnosis of diphtheria by one or the other of the modified methods just described.

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UNIVERSITY OF WOOSTER.

MEDICAL PROGRESS.

Hysteria with Trophic Symptoms, Simulating Syringomyelia.—WICHMANN (*Berliner klinische Wochenschrift*, 1895, No. 12, p. 252) has reported the case of an unmarried girl, twenty-seven years old, two of whose sisters had had epileptic attacks and in whom there appeared painless ulceration of the extremities of the fingers, leading in part to spontaneous amputation and in part to surgical removal. A suppurating ulcer formed upon the left forearm, alternately healing and reopening. At this time, after an attack of vertigo, the right arm was found to be heavy and weak, while the right thigh was numb and insensitive. The removal of a tooth from the upper jaw on the right side was unattended with pain. For a period of four weeks there was difficulty in evacuating the urine, so that the use of the catheter became necessary. There was little wasting, and the electric reactions were normal. There was no fibrillary contraction. The pharyngeal reflex, the right abdominal, the triceps, biceps, and forearm reflexes on both sides were wanting, as well as the conjunctival reflex. The skin-reflexes were wanting on the chest and back. The knee-jerks were increased and slight ankle-clonus was present. Common sensibility was impaired upon the entire right side of the body, including the head, but excepting the right foot, as it was also on the left hand and forearm and the lower half of the arm. Throughout this area the sense of pain and of temperature and the electro-sensibility were wanting. In the middle of the occiput was a small area of sensitiveness, increased upon touch. There was also undue sensitiveness in the left ovarian region. The fields of vision were contracted, the right more than the left. The pupils were reactive to light and in accommodation. The sense of smell was impaired upon the right side as compared with the left, and hearing on the right as compared with the left. The sense of taste was enfeebled upon the posterior portion of the right half of the tongue.

In the course of observation ankle-clonus disappeared and the anesthesia extended to the right foot. The nature of the disorder was positively established by the results of hypnosis. In this state the patient was able to raise the affected arm vertically and to move the right leg. By this means it was also possible to have the patient appreciate needle-pricks, hot substances, and the electric brush upon the left upper extremity. The woman improved sufficiently to take up some work, many of the symptoms disappearing, but at a later date when placed under less favorable conditions the symptoms began to return. Improvement was again effected by hypnotic suggestion, so that the patient continued to do well when favorably situated and not so well when her surroundings were less congenial.

The Etiology of Dysentery.—CELLI and FIOCCA (*Centralblatt für Bakteriologie und Parasitenkunde*, vol. xvii, Nos. 9 and 10, p. 309) report the results of a study of sixty-two cases of typical dysentery observed in Italy and Egypt. They were unable to find a specific pathogenic micro-organism, and concluded that the amœba coli could not be viewed as the direct cause of the disease: (1) because cases of epidemic, endemic, and sporadic dysentery occurred without the presence of discoverable amebæ. (2) They found that dysentery free from amebæ could be produced by inoculation with dysenteric feces or with cultures containing amebæ and bacteria, and also with amebæ destroyed by heat. (3) Amebæ were very common in the neighborhood from which the cases were derived, so that it is not surprising that they are frequently found not only in the intestines of dysenteric patients, but also in the intestines of those who had never had dysentery. Various forms of amebæ, such as the amœba guttula, oblonga, spinosa, diaphana, vermicularis, and reticularis, are found as harmless intestinal parasites in healthy persons, and in others presenting intestinal affections, including dysentery. The amœba coli has attracted attention by its form and its motility, the remainder escaping ordinary observation. Dysenteric stools contain constantly the bacterium coli commune, usually in association with a transitory variety, resembling the typhoid bacillus, and frequently with the streptococcus, and sometimes also a proteus. Dysentery may be induced experimentally by means of the bacterium coli introduced by the mouth or by the rectum, and sometimes by means of the other organisms named. It is possible that the activity of these is responsible for the transformation of the bacterium coli commune into the bacterium coli dysenteriæ, which is capable of transmission from animal to animal. This organism is characterized peculiarly by its capability, when administered by the mouth or the rectum, or injected subcutaneously, of generating a toxin that induces the typical lesions of dysentery. This toxin is precipitated from bouillon cultures by alcohol, and is soluble in water. It is capable of causing death before the local lesions have had time to develop. A variety of this intoxication is presented when melena occurs in conjunction with dysentery.

Gonorrheal Pyelitis and Pyoureter Cured by Irrigation.—At a recent meeting of the Johns Hopkins Medical Society, KELLY (*Bulletin of the Johns Hopkins Hospital*, vol. vi, No. 47, p. 19) reported the case of a woman, thirty-one years old, presenting an extensive accumulation of pus in the left ureter, extending up into the pelvis of the kidney, in consequence of a stricture of the vesical end of the ureter, with dilatation above it, and associated with gonorrheal infection. The stricture was treated by dilatation with a series of urethral catheters, increasing in diameter from two mm. to five mm. After evacuating the purulent fluid the ureter and the pelvis of the kidney were irrigated with medicated solutions, the caliber of the stricture was enlarged, and the quantity of accumulation above reduced from 150 to 100 c.cm. The purulent secretion was removed and all trace of gonococci disappeared. The following points are demonstrated by this case: Stricture of the lower extremity of the ureter can be diagnosticated, without operation, by using the cystoscope, with the bladder dilated with air by posture. Stricture of the ureter can be improved by gradual dila-

tation by a series of hollow bougies (catheters and) without kolpo-ureterotomy. A stricture through which a No. 5 (5 mm. in diameter) bougie is passed every day for several weeks will still hold back the urine if the walls of the ureter above have lost their contractility. Pyo-ureter and hydro-ureter can be diagnosticated by drawing off in a few minutes such a quantity of fluid as it is manifestly impossible for the kidney to secrete in that amount of time. Pyo-ureter and pyelitis can be cured by washing out the ureter and pelvis without any preliminary cutting-operation to disclose the ureteral orifice (as in kolpo-uretero-cystotomy). Variations in pressure in the column of fluid in a distended ureter can be demonstrated by a manometer attached to the ureteral catheter. In this way the course of the ureter can be mapped out.

The Spinal Lesions of Pernicious Anemia.—BURR (*University Medical Magazine*, April, 1895) has reported a series of cases of pernicious anemia presenting symptoms and lesions referable to the spinal cord. He finds that the localization of the lesion is fairly characteristic and constant. The cervical swelling is always the seat of greatest change, and the lesion progressively diminishes in intensity and extent, so that the lumbar cord presents little or no change. The parts affected are the posterior columns, the lateral columns in and near the crossed pyramidal tracts, the direct pyramidal tracts, and rarely a band running forward along the circumference of the cord (the direct cerebellar tracts). The gray matter suffers slightly, if at all. The posterior nerve-roots likewise suffer but little. The lesion is always symmetric, though sometimes extending a greater distance on the one side than on the other. The opinion is expressed that the primary change probably occurs in the nerve-fibers themselves. Among the symptoms observed are ataxia, abolition or exaggeration of the knee-jerks, sometimes paraplegia, and often slight, but not characteristic, sensory changes.

Diphtheria followed by Symptoms of Hereditary Ataxia, Epilepsy, and Dementia.—HOFFMAN (*La Médecine Moderne*, 1895, No. 25, p. 199) has reported the case of a boy, ten years old, who at the age of four had an attack of diphtheria with paralysis of the palate and pharynx, and with weakness of the heart. On arising from bed at the end of a month difficulty in co-ordination was observed. All four extremities were ataxic, both on intended movement and at rest. The gait was staggering and the entire body was involved in choreoid movements. There were, besides, nystagmus, loss of the knee-jerks, epileptic attacks, and pronounced dementia. The fields of vision were diminished, but the fundus of each eye was normal. Speech was difficult. The child was well developed and presented no visceral lesion. It is believed that the attack of diphtheria was not directly responsible for the symptoms, but that it excited the development of these as the result of a persisting but latent condition.

Syringomyelia with Reflex Iridoplegia.—At a recent meeting of the Société de Biologie, LÉVI and SAUVINEAU (*Le Mercredi Médical*, 1895, No. 15, p. 173) reported a case of syringomyelia presenting sensory dissociation, muscular atrophy in the hands and shoulders, spastic paraplegia, cutaneous trophic disorders, some loss of tactile sensibility, and inco-ordination of all four members. On laryngologic examination the right inferior adductor of the vocal band was found paralyzed. The right external rectus was paretic and the right internal rectus contracted spasmodically, with resulting homonymous diplopia. The pupils reacted in accommodation, but not to light; the right was contracted, the left dilated.

The Normal Situation of the Gall-bladder in Males.—To find the gall-bladder, HAMILTON (*Journal of the American Medical Association*, vol. xxiv, No. 15, p. 551) recommends that a line be drawn from the anterior superior spine of the ilium to the center of the xiphoid appendix and be intersected by another line from the umbilicus to the tenth chondro-cartilaginous junction. The fundus of the gall-bladder will be found in the right upper triangle near the apex, but nearer the right oblique line, and a needle thrust through the abdomen at the point indicated will usually transfix the viscus.

THERAPEUTIC NOTES.

The Treatment of Diphtheria with the Antitoxin.—BÓKAI (*Deutsche medicinische Wochenschrift*, 1895, No. 15, p. 233) reports the employment of the antitoxin in the treatment of more than one-hundred-and-fifty cases of diphtheria, and analyzes the results observed in one-hundred-and-twenty followed to their termination. Diphtheria-bacilli were found in all but five of these. Sixty-nine were in children less than three years old, and forty-five in children less than two years. In forty-nine intubation was required. Of the one-hundred-and-twenty, thirty-one died (25.5 per cent.). The mortality among the intubated cases was 43 per cent.; among the non-operative cases, 14 per cent. As compared with previous years, it appeared that in 1891 during a corresponding period the mortality among non-operative cases was 40 per cent., and among intubated cases 70 per cent.; in 1892, respectively 45.5 and 57.7 per cent.; in 1893, 45.7 and 77.5 per cent. Eighteen of the deaths occurred in children less than two years old, and twelve within forty hours after admission to the hospital.

Eucalyptus Oil as a Disinfectant in Scarlatina.—PRIESTLY (*Lancet*, No. 3736, p. 361) reports the results of observations made in 120 cases of scarlatina treated with oil of eucalyptus. Careful rubbings all over the body were practised three times a day for three days, followed by one rubbing after a warm bath. The disinfectant was also sprayed into the patient's throat, mouth, and nose, and diffused into the air of the room. Sequelæ and complications were treated with the usual remedies. As compared with 161 cases treated with other measures, the mortality in the 120 treated with eucalyptus was as 1.6 per cent. to 4.3 per cent.; the stay in the hospital of non-fatal cases was as 34.4 per cent. to 42.7 per cent.; that of fatal cases 8.5 per cent. to 13.4 per cent.; the time between the commencement of treatment and the return of normal temperature, as 11.4 per cent. to 10.3 per cent.; the percentage of complications and sequelæ, as 20 to 27.3; the percentage of return cases, as 3.9 to 5.

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A GLIMPSE OF SOME AMERICAN MEDICAL ANTIQUITIES.

WHILE we are hunting up our claims to Colonial and other descent and are tracing back our ancestry so far that prehistoric man fairly trembles, let us pause and think for a moment how valuable to us is the really old and true, and if we lack antiquities which can vie with those over the sea, why, where everything is relative, should we neglect and ignore the few choice specimens of the antique which are preserved among us? Not so very hoary, it is true; but our own locks are youthful, and we must reverence our aged as we find them, and let the old world's aged take care of themselves.

We in Philadelphia have not so very far to look or so very long to search. The old hospital at Eighth and Spruce stands firmly, having been well built, and looks calmly, as well it may, having performed its duties faithfully and quietly for a century-and-a-half. Its corner-stone is there, the leaden statue of Penn is there; its front looks pretty much as it must have looked an hundred years ago, being built of honest brick, in the plain substantial way. When additions were needed, they came without marring its symmetry, and through its halls the same unending succession has come of those whose names are always honorable in medical and civic annals, and the same steady line of residents and students, working faithfully for it, and in after-life still working in the same persistent, honorable, and useful way.

What better antiquity could we have than this? It answers our aspirations just as well as though its brick walls had risen at the word of some old-world monarch or minister a thousand years ago. For looking back into the mist of ages, we can see so little and so dimly, and beyond, "a thousand years are but as yesterday" even to us.

How very interesting the story of such a building can be one learns from reading the newly published *History of the Pennsylvania Hospital from 1751 to 1895*, by DRS. THOMAS G. MORTON and FRANK WOODBURY.[1] Its authors have done their work with a free yet loving hand. They have looked at the Hospital as the Hospital looked on the land in which it grew, as an institution bound up inseparably with the hopes, successes, and discouragements of those among whom it worked and had its being. They have made its walls of dingy brick transparent to the heart-beats and struggles of the living hearts within. Just how its founders started it, how they choose the ground for it, where the money came from, how the Assembly dealt with them and it, how they selected its staff, what kind of men they were, and what rules they made and endeavored to live up to, just how they felt when the British army took the Hospital by storm, filled its wards with their sick and wounded, and ran off finally with its spoons and valuables; how the human hearts of the managers quaked a little when epidemics came, and how they resolved to meet, for greater safety, at the far-off ferry on the Schuylkill while the yellow fever raged; how scantily attended were their meetings then, between yellow fever and sudden thunder-storms deterring them, the minutes show, and how a manager dreamed a dream that came wonderfully true, and probably many that did not,—all this and much more is of intense interest to us. We may laugh at

[1] The History of the Pennsylvania Hospital, 1751–1895, by THOMAS G. MORTON, M.D., Fellow of the College of Physicians, President of the Medical Staff and Senior Surgeon to the Pennsylvania Hospital, President of the Philadelphia Academy of Surgery, etc. Assisted by FRANK WOODBURY, M.D., Fellow of the College of Physicians, Honorary Professor of Clinical Medicine in the Medico-Chirurgical College, etc. Publication authorized by the Contributors at the annual meeting, May, 1893, and directed by the Board of Managers. Philadelphia: Times Printing House, 1895.

the zeal of the antiquarian, but as we read we would be antiquarians ourselves.

The management was often in financial difficulties during its earlier years. The war was being carried on, and they were often compelled to dispose of securities, "while loans were returned depreciated in value, or paid in paper money which could not be redeemed." "Their distress culminated when the British army entered Philadelphia, September 26, 1777. The English military authorities forcibly took possession of the Hospital, filled it with their sick and wounded soldiers and sailors, overturned the usual orderly management, and on their departure appropriated to their own use the blankets, bedding, and instruments, for which the Hospital received no compensation, either at the time or afterward."

The depreciation of the Continental currency seems to have made no end of trouble, debts to the Hospital being paid in almost worthless paper. "The loss of capital and interest by the Hospital from April, 1774, to April, 1784," shows its capital impaired more than one-half, not including the loss in students' fees and patients' board, paid in depreciated currency, and during this period, "hard money" being necessary, the managers were at times obliged to borrow on their own private credit. When, in 1780, the Assembly granted an order in favor of the Hospital for ten-thousand pounds, Continental money, it was worth only one-hundred-and-sixty-three pounds and some shillings.

The circumstances connected with the will of BENJAMIN FRANKLIN and the refusal of the managers to accept its possible benefits, are explained by extracts from the will and the managers' minutes. In his will FRANKLIN writes: "During the number of years I was in business as a stationer, printer, and postmaster, a great many small sums became due to me for books, advertisements, postage of letters, and other matters, which were not collected when, in 1757, I was sent to England by the Assembly as their agent, and by subsequent appointment continued until 1775, ... and the said debts not being demanded in such length of time became in a manner obsolete, yet are nevertheless justly due. These as they are stated in my great folio "Ledger E," I bequeath to the contributors of the Pennsylvania Hospital. . . . . I am sensible that much must inevitably be lost, but I hope something considerable may be recovered." This doubtful legacy, after investigation by the managers, was declined, because "the committee found also divers blanks, debits and credits, the amount of which they are not able to ascertain. . . . . They called on several persons who appear to be in debt, some of whom say they have accounts against the doctor exceeding considerably his demands against them. . . . . Upon the whole the committee conceive there is no probability of the legacy being productive."

The yellow fever seems to have made its first appearance in the Hospital record, August 28, 1793, a patient having been admitted in violation of the rules, and extra caution in granting admission to the hospital was enjoined upon the staff; and by September 30th, the minutes state that the disease was "raging in the city with great violence, and a Board of Managers cannot be expected to meet until it abates." DRS. RUSH and PARK are named as the only members of the staff who remained in the city; but later DR. FOULKE appeared and excused his absence from duty, as "it was improper for him to attend the hospital when he was continually among infected cases." That the epidemic deserved to be remembered may be seen from the fact stated in the minutes, that in ninety-nine days "upward of four-thousand persons have died in the city and liberties," computed to be about one-fifteenth of the inhabitants. The managers, however, felt "that they had reason to be thankful that during the awful visitation not more than two persons in the fever were admitted into the hospital, who died therein without spreading the contagion."

In 1798, the hospital being too dangerous, meetings of the managers were held at "Middle Ferry," on the Schuylkill. The names of those recorded as present at the meeting September 24, 1798, were SAMUEL COATES, ROBERT WALN, ISRAEL PLEASANTS, ROBERT SMITH, and MORDECAI LEWIS, Treasurer. Of SAMUEL COATES, whose name occurs very frequently, much material being gathered from his diary, there is related a very curious dream followed by a very speedy fulfilment, connected with the efforts of the panic-stricken prisoners in the Walnut Street Jail to escape. Considering that many were confined for debt, our more enlightened age would probably have opened wide the doors for their escape.

The accessories of hospital life, the slow growth of rules and regulations, of bounds and penalties, restrictions slowly evolving from the necessities and perversities of human nature, have all been con-

sidered worthy by the authors of research and study. The slow development of modern methods in the care of the insane, from the few damp cells of the old hospital to the space and beauty of the new department; the question of mixed clinics, showing how it struck the managers, and all the perplexities it introduced, things all of them now of the forgotten past—all these are judiciously and simply related; and if these fail to excite interest, there is the biographic chapter, with its lives of the men who made the hospital what it was and is, as managers, physicians, and surgeons, with their portraits, whenever they could be obtained, reproduced with all the too often scanty facts that make up our little records of past lives.

How the hospital acquired its library, its museum, and its works of art, more especially the history of the famous picture "Christ Healing the Sick," are fully related, and the long list of contributors to its permanent funds will be scanned with interest by many eyes.

The original painting of "Christ Healing the Sick" by MR. WEST, we are told, "excited such general admiration when exhibited in England, that patriotism took alarm, and nobles and commons, with one accord, agreed in making a determined effort to retain it in the country." MR. WEST then agreed to furnish a copy. It reached this country in 1817, and when placed on exhibition attracted such throngs that the income received from it up to 1843 amounted to more than twenty-five-thousand dollars. Various letters from MR. WEST and the Board of Managers are given, with an account of its transfer to Philadelphia and its location there, and a very spirited reproduction of the picture itself faces page 314.

The various pictures of the Hospital taken, from time to time, are reproduced with all the data concerning them, even to the bills of the engravers. The leaden statue of Penn, which was a gift from JOHN PENN, his grandson, "in lieu of a portrait which he had, at first, proposed to give the Hospital," was brought over from London in 1804. This statue was blown over in a severe storm in 1850, and after being repaired was replaced in its old and present position on the lawn south of the Hospital. Should one not be able to visit it there, a survey of the figure upon the tower of the Public Buildings will give a fair idea of its general appearance.

With rare discretion all the available gossip and small incidents of the past which bore any relation to the Hospital or its officers have been rescued and incorporated into the history, which opens like a thrilling tale with these words of the Preface: "About ten years ago in an abandoned closet of the 'Retreat,' an out-building of the hospital, was found a large collection of letters, accounts, and memoranda which were liable to be lost or destroyed." These letters, etc., formed the nucleus of the book, the germinant idea, working on which, with many an excerpt from the minutes and reproductions of old grants, deeds, bills, and other papers, the authors have constructed their history. The invaluable recollections of DR. CHARLES D. MEIGS, published in the Hospital's first report, are reprinted, for DR. MEIGS formed for the living almost the only medical link with Philadelphia's medical past, as a man whom some can personally remember, and who himself had listened to the voices of PHYSICK and RUSH, and whose graceful art of writing rendered the recollections of his younger days vivid and luminous to us. All these things, throwing light upon points of medical and general interest, add a charm of reality to the picture of the distant day when the Hospital stood in the fields, away from the growing city, with open country stretching far around it on almost every side.

It seems scarcely probable that the multitudinous modern hospital flourishing on specialism and State appropriations, with its long rows of private rooms and accommodations for the worthy and unworthy rich rather than the deserving poor, will ever attain to great honor in its green or ripe old age. Such honor and such tender associations will remain rather the prized and cherished possession of those institutions that have grown, not with the rank luxuriance of modern specialism and modern competition, but with the slow and steady accretion of years, and whose origin dates back so far as to seem almost coincident with that of the community in which good men have done their work and earned honestly from day to day their reward of love and trust.

ANTITOXIC THERAPEUTICS.

ALTHOUGH the endeavors of chemists to synthetize quinin have failed of success, they have yielded results scarcely less important than if their original object had been fully attained. More or less directly to the labors in this direction may be traced the discovery of many of the modern so-called anti-

pyretics. Of late years scientific activity has taken another direction, and the progress thus far made gives promise of leading to still more important and beneficial results. Were the guiding principles at fault the disastrous consequences of the tuberculin-treatment of tuberculosis would have forever ended the history of biologic therapeutics; but it is not so, and it seems a reasonable hope that we shall hear more of the specific treatment of disease, and even of tuberculosis. While the work is not yet completed, and the results are perhaps not conclusive, the evidence is strong and growing that we shall ere long be in possession of means for successfully treating the various infectious processes.

It was early learned that little could be hoped for from agents directed to the destruction in the diseased body of the causative organisms, but when it was appreciated that the disease-symptoms are largely attributable to the circulation of the toxic products of these organisms, the use of biologic antidotes naturally suggested itself, and with results that are certainly suggestive, not to say demonstrative. It is quite within the bounds of conservatism to concede, in a general way at least, some efficacy to the antitoxic treatment of tetanus, of cholera, and of diphtheria, while some doubt may be admitted as to pneumonia and typhoid fever, and no opinion can yet be expressed as to the results reached in the study of syphilis and smallpox.

There is great activity at present in this line of research, and some good may be hoped for as the ultimate outcome. Particularly suggestive are certain reports from Paris, which go to show that specific curative properties are possessed by the serum of animals rendered immune to streptococcus-infection. At a recent meeting of the Société de Biologie MARMOREK (*Compt. Rend. Hebdom. des Séances de la Société de Biologie*, 1895, No. 7, p. 123) related that by passing streptococci a number of times through rabbits he succeeded in developing in the former an extraordinary degree of virulence, so that the smallest quantity was intensely fatal. From these cultures he succeeded in isolating a toxin of great activity. Naturally immune animals treated with large doses of either the cultures or the toxin yielded serum possessing prophylactic and curative virtue, as demonstrated by experiments upon rabbits.

In a later communication (*Ibid.*, No. 12, p. 230) the same observer reported the results of the employment of this antitoxin in the treatment of forty-six cases of erysipelas. Recovery ensued rapidly in all but one, which occurred in a woman of sixty-seven, who died ten hours after the injection, as a result of pneumonia, which was present on admission to the hospital. The injections were followed by speedy lowering of the temperature, amelioration in the general condition, subsidence of the local phenomena, and disappearance of albumin from the urine when this had been present.

CHARRIN and ROGER (*Ibid.*, No. 7, p. 124) reported the employment of serum obtained from a mule treated with the products of bouillon-cultures of the streptococcus of erysipelas. At the end of ten days such cultures were reduced on the water-bath to one-tenth of their original bulk, and were then exposed in a thermostat to a temperature of 115° C. Then, at intervals of two weeks, injections of 30 c.cm. of the sterilized cultures were made into a vein of the mule for eight successive times. With this serum was treated successfully a woman twenty-eight years old, suffering with puerperal fever of moderate severity. Two doses of 8 c.cm. and one of 25 c.cm. were administered. In a second case (*Ibid.*, No. 12, p. 224) a similar result followed the injection of one dose of 26 c.cm., three of 20 c.cm., and one of 10 c.cm. In a third case, one of erysipelas in a child three weeks old, recovery resulted after one injection of 5 c.cm. Three injections of 30 c.cm. in a case of pseudo-membranous angina due to streptococci and staphylococci, in a woman twenty-five years old, were likewise followed by recovery.

At a previous meeting, and also at a subsequent meeting, of the same Society HÉRICOURT and RICHET and TRIBOULET (*Ibid.*, No. 1, pp. 13, 15, 17, 18; No. 13, p. 268) reported further observations on the application of serotherapy to the treatment of tuberculosis and of syphilis.

These results are not the birth of a day or of accident, but they are the natural outcome of the growth and development of biologic investigation and pathologic research, and represent stages in the elaboration of what promises to be a great and enduring truth. A realization of the hopes based upon the advances already made in the domain of antitoxic therapeutics would place the treatment of disease upon a scientific plane that it has hitherto not occupied.

EDITORIAL COMMENTS.

The Mechanism of Agraphia in Cases of Cortical Motor Aphasia.—One of the most interesting, as well as most complex, subjects in the domain of cerebral physiology is that of the faculty of expression. Most of our knowl-

edge of the processes concerned has been derived from the evidence afforded by pathologic observation—the association and correlation of the clinical phenomena present during life with the lesions found after death. The important demonstration by Broca many years ago that lesions of the third frontal convolution on the left side caused in right-handed persons the derangement of the mechanism by which thought is transformed into expression has been followed by a train of observations that have greatly expanded our knowledge on this subject, although there still remains a good deal to be added to complete the story.

Expression of thought by gesture, by writing, by speech, or by any other conceivable mechanism depends, first, upon the revival of a previous sensorial impression; secondly, upon the co-ordination of the necessary motorial impulses; and, finally, upon the activity of the peripheral neuro-muscular apparatus. Derangement of any one of these processes will be attended with interference with one or other mode of thought-expression—the first sensory or amnesic, the second motor or ataxic, the third paralytic. The particular mode of expression interfered with and the character of the disturbance depend upon the situation of the lesion and the educational development of the individual.

Expressional processes dependent upon visual and auditory impressions, for instance, are lost when the centers for sight and hearing respectively are destroyed, while all of the usual modes of expression are lost as a result of lesions of the motor center in the third frontal convolution. These centers, as is well known, are most commonly situated in the left hemisphere, but their functions and activities may be represented in the right half of the brain. Varying degrees of disturbance result from interference with the connecting paths between the centers concerned in thought-expression. Inability to read (alexia) must exist when visual impressions are not properly interpreted, as in mind-blindness or word-blindness. Inability to write (agraphia) spontaneously or on dictation must exist under the same conditions, although the ability to transcribe from copy may be preserved, while inability to write on dictation must be lost when mind-deafness or word-deafness exists, although the power of spontaneous writing or of transcription may remain.

In order to determine whether or not agraphia is dependent upon a lesion of a special graphic motor center, said to be situated in the second frontal convolution of the left side of the brain, Mirallié (*Compt. Rend. Hebdom. des Séances de la Société de Biologie*, 1895, No. 12, p. 250) made a series of observations in ten cases of aphasia. These he made attempt to write spontaneously in the ordinary way, to write upon dictation, to transcribe from copy, and to write the names of objects presented to them. Finally, he had them attempt the same exercise with the aid of cubes, upon each surface of which was one letter of the alphabet. For control-purposes he subjected to the same experiences two patients not affected with aphasia, but of equal degree of intelligence and education with the others. The result of the investigation showed that there was no difference in facility or difficulty between writing in the ordinary way and forming words with the aid of the lettered blocks. One patient was able to trace some of the letters of his name and to copy well, and to do as much with the blocks. Six were able to write their names, but were unable to write spontaneously any phrase whatever. Writing from dictation was defective, while transcription was well preserved. The result with the cubes was much the same. One patient, who had largely recovered from his aphasia, was able to write spontaneously and upon dictation equally well by hand and with the cubes. The last two patients, who were quite cured of their aphasia, were able to write spontaneously, upon dictation and by transcription, and were able to form words equally well with the cubes. There thus appeared to be a perfect parallelism between the ability to write in the ordinary fashion and to form words with the cubes.

The conclusion is reached that in cortical motor aphasia the agraphia does not depend upon any difficulty in tracing upon paper the letters and forming them into words, but upon a failure to evoke the memory of the letters and of the words, and that agraphia does not result from a motor disturbance, but from a loss of graphic images, and is thus not dependent upon a lesion of a special graphic motor center specialized for the movements of writing.

The Pathology of the Pancreas.—It is only within comparatively recent years that any notable additions have been made to our knowledge of the pathology of diseases of the pancreas. A decided impetus was given to the subject by the epoch-making researches of Fitz,[1] who practically established upon a firm clinical basis the symptomatology and diagnosis of acute pancreatitis and allied conditions. Of the etiology of these we practically know nothing, and this line of research affords a field for investigation that promises to yield important and interesting results.

Recent clinical and experimental observations have shown that some lesions of the pancreas are attended with glycosuria, but an even more obscure association is that with the peculiar condition known as fat-necrosis. While this has been observed most commonly in connection with pancreatic disease, it has also been found in some cases in which such disease could not be demonstrated. An interesting contribution to this subject has recently been made by Hildebrand (*Centralblatt für Chirurgie*, 1895, No. 12, p. 297), who, in a series of experimental observations on cats, succeeded in inducing fat-necrosis by ligation of the pancreas or its vessels, and by transplantation of the organ in whole or in part. In two animals the pancreas alone was ligated; in six others ligatures were also applied to all of the veins. Sugar was found in the urine of one of these. In one instance a bit of pancreas, two by three centimeters, was excised from the continuity of the organ and fixed with a suture in the omentum of another animal; and, again, an entire pancreas was treated in the same way. In another experiment a whole pancreas was scarified and made to surround a portion of the small intestine. The animals withstood the operations well, but in all the characteristic white areas of fat-necrosis appeared in the peritoneum comparable to that observed in man.

The Consumption of Alcohol, Tea, and Coffee in England for Thirty-two Years.—According to the *Lancet* (March 30, 1895, p. 821), investigation shows that while there has been in England since 1861 an enormous increase in

[1] Medical Record, February 23, March 2 and 9, 1889.

the consumption of tea, coffee, etc., there has at the same time been a steady diminution in the consumption of both beer and spirits, the lines indicating the last two being practically parallel, not only with one another, but approximately with the base-line. Between 1861–'62 the total consumption of tea, coffee, etc., was 120,000,000 pounds. This figure rose until in 1893 it was 265,000,000 pounds. In the same period the population increased from 28,500,000 to 38,500,000, so that while in 1861 the consumption of tea, coffee, etc., per head was 4.38 pounds, in 1893 it was 6.90 pounds. In 1861 the consumption of wines and spirits equalled 35,000,000 gallons or 1.22 gallons per capita, and in 1893, 52,000,000 or 1.35 gallons per capita, the highest figures, 1.80 gallons, being reached in 1876, since which time the consumption has steadily diminished. The amount of beer consumed per capita was in 1861, 24.3 gallons per head; in 1874, 34, and in 1893, 29.6 gallons. In 1861 the total consumption of tobacco was 34,000,000 pounds or 19¼ ounces per capita. In 1863 the duty on cigars was reduced, and the consumption rose to 21½ ounces in 1865; to 23¾ ounces in 1877. In 1878 and 1879 the duty on tobacco and cigars increased, and the consumption fell to 22½ ounces per capita. From this time it gradually recovered until 1887, when the duty was reduced. The consumption quickly rose until it attained 26 ounces per capita in 1893, and the total consumption 62,000,000 pounds.

An analysis of these figures shows that there has been a decided diminution in the demand for intoxicating stimulants, while there has been a considerable increase in the demand for non-intoxicating stimulants, principally tea and coffee.

The Sanitarium Association of Philadelphia.—We cannot refrain from again calling attention to the noble and life-saving work of the Sanitarium Association of Philadelphia, whose object is to afford poor children and their attendants the opportunity of securing a day's airing and escape from the city's heat in summer-time. From the eighteenth annual report of the Association we learn that during 1894 this object was carried out on seventy-three days between June 7th and August 31st. In this period there were no less than 158,390 admissions to the Sanitarium at Red Bank, exceeding the largest previous record by 26,497, and the annual average number for the preceeding fifteen years by 86,654. Of the whole number, 67,306 included children under five; 110,751 children under ten, besides 41,686 adults, for whom two days in the week have been especially set apart. Medical attention is given to such children as require it. In addition provision exists for the hospital care of a limited number of children. Of this privilege 207 children under the age of five availed themselves during the year. Skilled nursing forms an important adjunct in this connection. Among recent improvements is a bath-house for infants and young children, provided with twenty durable tubs, so separated the one from the other as to afford some degree of privacy. Thorough supervision is given the bathing, so that excesses or abuses are not permitted. Food is abundantly provided for all, free of charge, and clothing is furnished to the most destitute. So economically and successfully were the affairs of the Association administered during the year that the cost per capita was 7.7 cents, a lower figure than for any preceding season. We feel sure that the mere recital of these interesting data will stimulate the philanthropic to aid substantially so worthy an undertaking. Mr. Edward H. Rowley, 5 North Front Street, is the treasurer of the Association, and will no doubt be glad to receive contributions in money or other useful articles.

The Growth of First-born Children.—As the result of a series of measurements of school-children, BOAS (*Science*, N. S., vol. i, No. 15, p. 403) found that first-born children exceed later-born children in stature as well as in weight. The difference was found to prevail from the sixth year until the adult stage in females, and from the sixth year to the fifteenth year in males. The difference in stature was found to be 10 mm. in girls to 7 mm. in boys, and the difference in weight was 1.6 pounds in girls to 1.2 pounds in boys. The observations seemed, further, to indicate that second-born children exceed somewhat later-born children in stature and weight. It is inferred that the greater vigor of the mother at the time of the birth of the first-born, and the greater care bestowed upon the first child during its early childhood may be the cause of the difference. The cares due to the increase in the household tend to weaken the mother and to decrease the amount of motherly attention devoted to later-born children. These observations show a reversal of the conditions found at birth, as it has been found that the weight and length of newborn children increase from the first-born to the later-born.

Remarkable Surgical Activity.—The *Lancet* (March 30, 1895, p. 823) relates that Surgeon-Lieutenant G. C. Hall was recently called upon to operate on a patient in an Indian village some twelve miles from the railway and twenty-six miles from any English station; and, although no means was taken to let the people in the surrounding villages know of the intended visit, the news of the surgeon's coming spread, and a large number of natives came to receive treatment. During a period of six days 394 patients were seen, 147 operations were performed, including the removal of sixty-nine cataracts. The surgeon lived in a camp; the operations were all performed in the open air under the shade of a large mango tree, the patient lying on a native bed, at the head of which the operator sat. As far as possible the cases were treated antiseptically. When the surgeon left, a native assistant remained to look after the subsequent care of the patients.

CORRESPONDENCE.

IN RE WHITE'S OPERATION FOR HYPERTROPHIED PROSTATE.

To the Editor of THE MEDICAL NEWS,

SIR: Dr. Belfield, in the *Journal of the American Medical Association* of March 9, 1895, and Dr. Bangs, in the *Medical Record* of April 6, 1895, published under the heading "Warning against Castration for Prostatic Enlargement," communications which, while they express some views with which I am in entire accord, contain, on the other hand, statements that hardly seem justified by the facts now before the profession.

No one could deprecate more than I the indiscriminate performance of the operation. I suggested it with great caution, laying before the American Surgical Association the line of thought and the experimental work that seemed to me to give the idea scientific standing. More recently I wrote (*British Medical Journal*, January 5, 1895; THE MEDICAL NEWS, Dec. 22, 1894) that while the evidence then existing obviously and amply justified the original suggestion, I desired to call attention to the fact that I had not made it without hesitation. I added that, "having observed with disapprobation the undiscriminating assaults of some extremists upon the urethra, the tubes, and the ovaries, and more recently upon the appendix, I did not want to be responsible for a similar attack upon the testicles," and that I knew that "the step from experiment to operation is and should be a long one, and felt the responsibility involved in proposing a new operation, and especially one of this character—easy of performance, with a low mortality, and intended for the relief of a condition of enormous frequency."

I am still most desirous of having the operation confined within its proper limits, and to this extent am in sympathy with the gentlemen mentioned.

But when Dr. Belfield says that while it is admitted that "castration may cause atrophy of glands, subsidence of edema, and relief of distress, but that it will not reduce the hypertrophied connective tissue is *à priori* probable;" and Dr. Bangs writes that "a theoretical operation, based upon observations upon dogs and eunuchs, in whom physiological atrophy of the prostate is said to be induced by the abrogation of its sexual function, cannot reasonably be applied with the expectation of getting the same results in elderly men in whose prostates hyperplasia has already taken place," and reiterates that the operation "is based on theory alone," they seem to me to ignore existing and conclusive evidence. This is now complete in every particular as regards the effect of bilateral castration on the majority of hypertrophied prostates. The experimental and theoretic stage has long since been passed. I have in my possession sections of a prostate taken from a patient that died after, but not because of, the operation, which show clearly that it *does* reduce the entire gland, and that the hypertrophied connective tissue shrinks and dwindles after the earlier disappearance of the glandular elements. But that this assertion may not rest on my statement I would quote Mr. Joseph Griffiths, F.R.C.S., Hunterian Professor of Surgery and Pathology in the Royal College of Surgeons, England, who has recently reported on the condition of an enlarged prostate eighteen days after double castration. He describes in detail and figures (*British Medical Journal*, March 16, 1895) the changes which had taken place, summing up as follows: "In short, the cell-elements first proliferate, and ultimately disappear, leaving a comparatively small amount of fibrous connective tissue in their place. . . . The gland, whether enlarged or normal, undergoes certain degenerative changes after removal of the testicles which lead to its conversion into a small, tough, and fibrous mass in which there are only remains of the glandular tubules and ducts."

As to the clinical evidence Dr. Bangs urges that, to test the results of the operation, "the size of the prostate should be determined by three examiners, and the examinations repeated with sufficient frequency to determine positively the size of the organ." These conditions which are somewhat rigid, have been complied with in all my own cases, in one of which the estimated shrinkage of the size of the prostate from that of a small orange to that of a walnut took place in a week. A half-dozen examiners confirmed this, and several hundred medical students saw the patient and learned directly from him of the concomitant and remarkable improvement in his symptoms. Dr. Lilienthal, of New York, two weeks after the publication of Dr. Bangs's letter, published the report of a case (*The Medical Record*, April 20, 1895) which so completely answers all Dr. Bangs's theoretic objections as to be conclusive in itself. I may add, however, that I have now notes of similar cases to the number of nearly one-hundred, in most of which all previous palliative treatment had failed, and in which the results have been equally striking. It seems to me too late to say, as Dr. Bangs does, that the relief appearing within a few hours has been too positive to be attributed to the operation itself, because "it hardly seems rational to believe that a hyperplastic organ in which, no doubt, there has been an increase of the connective-tissue element, should diminish in size within a few hours after castration has been performed." The facts are against him. The hyperplastic organs do diminish in size, and often in an almost incredibly short space of time.

Both the gentlemen who have been moved to warn the profession emphasize the possibility of mistake in diagnosis, Dr. Belfield going so far as to say that "whenever a case of real or supposed prostatic enlargement demands operative relief this should always be an incision into the bladder." I am quite willing to admit that there must be some doubtful cases, and that in these and in a certain proportion in which the diagnosis is certain a cystotomy will often be desirable. But it is assuming altogether too much to claim that this is "always" proper. I have not found the great majority of cases of prostatic hypertrophy difficult of recognition nor of classification by combined rectal and instrumental exploration. But if I may be thought to be mistaken as to this and other similar questions raised by these gentlemen, it is hardly likely that Fenwick and Moullin and Griffiths in England, Bereskin in Russia, Helferich and Meyer and Hænel in Germany, Ramm in Norway, Watson and Warren in Boston, Halsted and Finney in Baltimore, McBurney and Stimson and Pilcher in New York, Andrews in Chicago, Souchon in New Orleans, Walker in Detroit, Haynes in Los Angeles, and dozens of other surgeons of more or less prominence have been wrong as to their diagnosis, or in saying that previous palliative treatment has failed, or unreliable in their descriptions of the rapid and sometimes astounding shrinking of the gland and disappearance of the subjective symptoms, even including long-standing cystitis. They are all now on record to this general effect at any rate.

Dr. Belfield alludes to a case in which a patient with a large prostate, "evidently inflammatory," and severe cystitis, was found, by suprapubic incision, to have a small calculus, previously undetected. He adds: "Prolonged vesical drainage was followed by great reduction of the prostatic enlargement and by a symptomatic cure." He then imagines with apparent horror the status —professional and legal—of the surgeon, who might

have done castration, when the calculus was subsequently discovered. This sort of argument appears to me to be misleading, as it lacks necessary detail. The age of the patient, indicating the value of the testicles from a sexual standpoint; the relation of the calculus to the enlargement of the prostate—*i. e.*, whether cause, which would be rare, or effect, which would be common; the period indicated by the word "prolonged"; the presence or absence of a urinary fistula; and the exact condition called a "symptomatic cure," should all be known before any such comparison could be drawn. I mention the case because in a gentleman, aged seventy-six years, with a large prostatic hypertrophy and a secondary calculus, which had formed after a previous litholapaxy, and which lay in a deep post-prostatic pouch, I have within the last month deliberately performed castration as a primary operation. Two weeks later, the prostate having shrunken to one-sixth its former bulk, the residual urine having disappeared, and the cystitis (in spite of the presence of the calculus) having almost vanished, I crushed and evacuated the stone. The patient was sent to me by Dr. Schum, of Huntingdon. He went home free from all symptoms.

Dr. Belfield says, finally, that "the claim that double castration is safer than drainage, is not, in his experience, warranted, if drainage be made either by perineal urethrotomy or suprapubic incision in *deux temps;* the danger in cases that really demand operative interference is the anesthetic, not the knife." But drainage in most cases is only a palliative measure, and, if permanent, is a source of more or less continued danger and of great discomfort to the patient. Dr. Belfield has very properly described it under the head of "Palliative Operations" in an article that he has published elsewhere. It is not fair, therefore, to compare it at all with a measure that in properly selected cases is curative, and which thus challenges comparison with the various forms of prostatectomy. He might almost as well have written of the mortality of catheterism, which also gives great relief in some cases. As to the anesthesia, as double castration can easily be performed within three minutes, it seems unlikely that any serious objection to the operation will prevail on that account. I have on several occasions completed it in a little less than three minutes before the class at the University of Pennsylvania, and without undue haste. In regard to the general question of mortality, however, I may be pardoned for quoting from a personal letter from Sir Joseph Lister, who writes me: "I am glad to see from the cases that have been published that your remedy has proved so effectual in this most distressing class of patients. If I have any fault to find with you in speaking of the advantages of your procedure, it is that you seem to me to underrate them when you say that castration is an operation of little danger. You might, I think, have truly said that if it is performed with sufficient antiseptic precautions it is entirely free from danger. The *rapidity* of the relief afforded seems to me as remarkable as it is satisfactory. Allow me to congratulate you cordially on this valuable addition to our art."

My personal and professional regard for the gentlemen who have criticised the operation, and my knowledge of their sincerity of purpose, have led me to reply at such length; but I also have been actuated by a desire to have both its merits and demerits kept fairly before the profession. There is much yet to be determined in regard to it, especially as to the selection of suitable cases and as to its remote effects; but I think I may fairly claim that the existing evidence—experimental, pathologic, and clinical—removes it from the region of theory and speculation, and demonstrates its applicability to a large proportion of cases of hypertrophy of the prostate.

Dr. Bangs's statement that "if this theory could be proven, about one man in three, after the age of fifty, ought to submit to castration in order to prevent enlargement of his prostate," is an extension of the operative field which must be regarded as peculiarly his own. I have as yet not considered the subject from the standpoint of early prophylaxis. As the theory *is* proved, it would be interesting to know how Dr. Bangs proposes to select his cases. Very respectfully,

J. WILLIAM WHITE.

1810 S. RITTENHOUSE SQ., PHILA.

℞ THE TREATMENT OF OPIUM-POISONING BY POTASSIUM PERMANGANATE.

To the Editor of THE MEDICAL NEWS.

SIR: It is now nearly a year since an editorial regarding the permanganate treatment of opium-poisoning appeared in the *Journal of the American Medical Association*, May 19, 1894, which concluded with the statement that "a new antidote to morphin was not urgently demanded, since the treatment already in general use is very efficient, and, as a rule, successful.[1] No argument has the power that facts possess, and it is for that reason that an answer to this editorial is more appropriate now than it would have been a year ago.

First of all, the expression "a new antidote to morphin" is, strictly speaking, incorrect. The editor of the *Journal* should have said "an antidote to morphin was not urgently demanded." There was no antidote to morphin known up to the time I made my humble efforts in that direction. Does the writer of the editorial consider belladonna and its alkaloids as opponents of morphin? Can one narcotic be a real opponent to another narcotic? Many authorities, among them Brown-Séquard and J. Harley, dispute an antagonism between these two narcotics. Harley concludes that in medicinal doses the essential effect of morphin (hypnosis) is both increased and prolonged by the action of atropin, whether introduced previously or at any time during the operation of the former. Dr. John S. McLain, of Washington, in a paper entitled "Narcotics and Narcosis in Children" (see *Archives of Pediatrics*, June, 1893), says:

"The opinion which has been gaining ground for several years seems now well established that belladonna and its alkaloids are of little use in the treatment of opium-poisoning, W. H. Thompson going so far as to state that 'the cases in which the opium-narcosis is really dangerous are those in which belladonna is useless, if not injurious.' Lenhartz, in his experiments on dogs, came to the conclusion that in no case did the alkaloid have any effect upon the more dangerous appear-

[1] My attention to this editorial was called by Dr. T. S. Carpenter's report in your esteemed paper of June 23, 1894, of a case of accidental morphin-poisoning, in which the permanganate had rendered him signal service. Dr. Carpenter criticises the editorial, but from a standpoint differing from mine.

ances, the coma, cramps, and convulsions, and hence he holds that the opposing power is limited and of no avail in serious cases, the atropin increasing the heart-depression already brought about by opium, and that 'the physiologic antagonism between atropin and morphin is not established by a single authentic observation.' Dr. T. D. Smith, of Louisville, Ky., writing upon the subject, remarks: 'In order to root out more rapidly the prevalent error as to the use of atropin, it would be better that it be not mentioned at all in connection with the treatment of opium-poisoning."

As to emetics, they cannot be called antidotes in the true sense of the word; besides, they are utterly unreliable in narcotic-poisoning, and are simply inducive to loss of precious time. Dr. McLain, in the paper above mentioned, says "that it is a great mistake to attempt to induce vomiting by copious draughts of hot mustard-water; forty grains of ipecac in water, twenty grains of zinc sulphate in water, etc., as recommended in many of our text-books." Another objection, he says, to flooding the stomach with these fluids is that they themselves serve to dissolve the poison, whatever it may be, and hence aid in its more rapid absorption. On the same ground he objects to copious draughts of black coffee.

On the other hand, I have shown beyond a doubt that the contact of permanganate and morphin results in rendering the latter instantaneously harmless, and therefore the permanganate is the only antidote to opium known so far. It cannot be styled a new antidote. There does not exist an old one. If it does exist, I should like to know its name.

It is with some satisfaction that I now can point to about thirty-five cases of opium-poisoning in which the antagonist has proved its great value. Yet how much quicker would it have acted had it been employed at the very beginning of medical assistance, instead of allowing so much valuable time to be lost by resorting to other plans of treatment. First destroy the poison, rid the body of its foe, and then Nature will be ready and quick enough to restore impeded functions; the damage will then be repaired without difficulty. To remove the obstacle and to annihilate the poison should be our very first duties. It is truly a miracle that the potash-salt did accomplish so much when circumstances combined to defeat its success. Even in the case I had (see *Medical Record*, March 2, 1895) my colleague legitimately resorted to the usual methods for an hour-and-a-half before I had an opportunity to invoke the aid of the permanganate. Still the patient comparatively quickly responded to it, and my mind was relieved of a great burden; for, had I lost the patient, the entire odium would have fallen upon the salt of permanganic acid.

I shall now make a statement which may create severe comment or may place me in the light of an enthusiast, but which statement the experience of the future will justify and uphold. I say that any physician arriving at the side of a person suffering from opium-poisoning, who does not at once administer to that person a sufficient quantity of the permanganate, commits an act of gross negligence.

The ambulance-surgeon should first administer the potash salt before conveying the patient to the hospital. Is it not unjust, unreasonable, to submit a patient to the shaking and rattling of the wagon, which is bound to promote the absorption of the poison by the stomach? Every physician, every ambulance-surgeon, should keep the permanganate of potash among his emergency drugs. Let the stomach-pump alone, for its use only increases the cerebral congestion already present. Discard atropin; do not superadd one narcotic to another. If one need to strengthen the heart-action, resort may be had to strychnin hypodermically. If one wish to give coffee, let it be given as an enema. Artificial respiration is necessary, and let the patient be kept awake, but not too forcibly, by the use of cold affusions; but, above all, let us not neglect the thorough and judicious administration of the powerful opponent of the narcotic in question.

It should be given to meet three different indications: First, it should be given by the mouth, well-diluted, to annihilate any opium or its alkaloids that still may be in the stomach. If the patient is unable to swallow, the antidotal solution can be administered through the nose with the aid of a hard-rubber catheter, a piece of rubber-tubing, and a funnel. These appliances can easily be procured. One grain of $Mn_2Os_8K_2$ annihilates one grain of morphin. It should always be diluted to the utmost possible degree. The second indication is to destroy the morphin contained in the circulating blood through hypodermic injections of the antidote—again as well diluted as possible. The third indication is to decompose the alkaloid that returns from the circulation to the stomach. This is accomplished by giving the patient by the mouth, from time to time, weak solutions of the potassium salt, say one grain to a tumblerful of water. No coffee or other liquids—nothing but weak permanganate solutions should enter the patient's stomach. Such a plan of treatment will not fail to bear gratifying results, and these in turn will tend to hasten the general acceptance of that important therapeutic truth, that potassium permanganate is the antidote to opium, its preparations and alkoloids.

Very respectfully yours,

WILLIAM MOOR.

103 WEST FIFTY-EIGHTH ST., NEW YORK,
April 20, 1895.

"AMERICAN DYSPEPSIA."

To the Editor of THE MEDICAL NEWS,

SIR: While I was a medical student in the United States nothing attracted my attention more than the great number of sufferers from gastro-intestinal catarrh. Indeed, scarcely a day passed without meeting a victim of this malady.

First I meet a young man, about twenty years of age, in fact in the prime of life, suffering with headache, epigastric distress, or pain after eating, and regurgitation of a sour fluid. He is weak and emaciated, and even tired of life. Then I see a woman with a melancholic expression and anemic countenance, seated before a physician in a hospital, narrating to him the woes and miseries that follow the taking of food. She seeks relief from "heartburn" and nausea, asks for a narcotic that she may get a good night's rest, even begs for a drug that will renew her strength. To the doctor such complaints are common, and he has readily diagnosticated the case as one of gastro-intestinal catarrh. Stimulants

and fermentative agents, as hydrochloric acid, pepsin, or pancreatin, will be prescribed, and the patient instructed *not to eat any starchy food.*

I estimate that about one-seventh, or 15 per cent., of the cases treated in the out-patient departments of the hospitals in Philadelphia are cases of gastro-intestinal catarrh—such at least I found to be the case in three of the leading hospitals. At the Pennsylvania Hospital I found that among the 2112 patients treated during the year 1892 there were 240 cases of this affection. In the German Hospital 3504 patients were treated in 1891 in the out-patient medical department, among whom were 211 cases of the disease, and in the Jefferson Medical College Hospital, in the year 1892, there were 2983 patients treated, with 777 cases, making a total 8599 patients, with 1228 cases of dyspepsia. It is well to state that in these statistics I have not included those cases that were diagnosticated as cases of "entero-colitis," "diarrhea," "constipation," and "debility," most of which were associated with "indigestion." It is also well to state that among the non-dyspeptic cases were many who, while they had dyspepsia, did not come to the hospital to be treated for this, but for some other disease.

Why is it that such a malady exists among the people of the United States more than in any other country? Is it the climate? Is it the food? Or is it the undue time allowed for proper mastication? This has seemed to me the more reasonable supposition, and led me to visit some of the largest restaurants in the business part of the city on different occasions, and to study carefully the time that was devoted to mastication. Of one-hundred-and-fifty individuals of various ages I found that on an average twelve minutes and two seconds were devoted to breakfast, eleven minutes and forty-five seconds to dinner, and about eleven minutes to supper. About 40 per cent. drank coffee at breakfast, dinner, and supper, without taking any water.

To test the fact whether or not eleven minutes were sufficient time to masticate a restaurant beefsteak as it should be, so that the gastric juice may penetrate it, I succeeded in getting a young man seventeen years of age, and in perfect health, and with good, sound teeth, to eat such a steak in eleven minutes, after which a tablespoonful of mustard well mixed in a cupful of warm water was given him (not against his will), which produced vomiting, and the steak was brought to view. On examination I found many pieces of the meat fully an inch in length, and scarcely marked by the teeth. It is hardly necessary to state that the presence of such large pieces of food in the stomach will doubtless produce irritation, followed by inflammation, and hence finally bring about gastro-intestinal catarrh.

From the foregoing observations and experiment it can be safely said that at least 80 per cent. of the dyspeptics of American cities are reaping the result of incomplete mastication. They have forgotten that the stomach does not masticate, and that by devoting ten or fifteen minutes more to mastication of their food their lives would undoubtedly be prolonged as many years.

Incomplete mastication, I believe, is the main cause in nearly every case of dyspepsia, and hence for its cure strict orders must be given to each and every patient to take sufficient time to masticate each particle of food thoroughly. Drugs given to many dyspeptics do more harm than good, and so a prescription like the following is more often the recipe "par excellence:"

℞.—Half an hour's time for breakfast,
One hour's time for dinner,
Half an hour's time for supper.

Very sincerely yours,

HAMMOUD MOUKADDIM, M.D.

MAUSSOURAH, EGYPT.

NEWS ITEMS.

The Ohio State Medical Society will hold its semi-centennial meeting at Columbus, May 15, 16, 17, 1895. An elaborate and interesting program has been prepared.

Medicine is the name of a new "monthly journal of medicine and surgery," published at Chicago, under the editorial direction of Dr. Harold N. Moyer.

Dr. James Kennedy, Professor of Pharmacy in the Medical Department of the University of Texas, died suddenly of nephritis on March 29th, at the age of thirty-two years.

Philadelphia County Medical Society.—Owing to the meetings of the American Medical Association and the Medical Society of the State of Pennsylvania, which fall this year upon May 8th and 22d, the regular meeting-days of the Philadelphia County Medical Society, the latter Society has substituted for these two meetings one meeting on May 15th, for which an extremely interesting program has been arranged.

The Nebraska State Medical Society will hold its Twenty-seventh Annual Meeting at Grand Island, Nebraska, May 21st to 23d. The following are the officers: President, Dr. H. B. Lowry, Lincoln; Vice-Presidents, Drs. J. E. Summers, Jr., Omaha, and W. B. Ely, Ainsworth; Secretary, Dr. George Wilkinson, Omaha; Corresponding Secretary, Dr. W. R. Lavender, Omaha; Treasurer, Dr. W. M. Knapp, Lincoln; Committee of Arrangements, Drs. J. Lue Sutherland, W. B. Hoge, M. J. Gahan, all of Grand Island. A cordial invitation is extended to the regular medical profession of Nebraska to attend the meeting.

Successful Autoplasty.—The *Medical Press and Circular* relates the case of a man who had lost his nose, in the place of which there existed a large and hideous opening. Attempts had been made to replace the missing part by plastic operation, by transplanting a flap of skin from the forehead, and by grafting a newly amputated finger, but without success. Finally it was concluded to use a finger of the patient, which was trimmed and placed in the wedge-like opening made in the forehead-flap to receive it, and here it was kept for a month or two with the aid of a plaster-of-Paris bandage. Ultimately good union took place between the finger and the adjacent structures of the nose. Then the finger was amputated in easy stages and its extremity rounded off with a skin-flap. The ultimate result was altogether satisfactory. This same operation was performed a year or two ago, if we remember correctly, by Dr. J. P. Parker, now of St. Louis, Mo.